

Punitive Damages for Environmental Public Welfare: An Empirical Study of Legal Attributes and Attribution

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Abstract: As an important legal mechanism of local social governance, punitive damages for environmental public welfare can have a certain deterrent effect on regional environmental damage, so as to improve the social governance environment and protect regional public interests. In the case of increasingly serious environmental problems, the difficulty of local environmental governance is increasing, and local governments and legal circles have discussed the issue of regional punitive damages to promote the improvement of the regional social governance environment. On this basis, this paper puts forward several hypotheses. the regional attribution of punitive damages for environmental public welfare, and the relationship between the amount and regional environmental restoration; the implementer of regional punitive damages, the relationship between legal regional limitation and regional environmental protection; The impact of the improvement of the regional social governance system and the soundness of the law on the effect of punitive damages, as well as the relationship between the participation rate of governments at all levels and the fairness of the whole society. The results show that whether local governments have an impact on public welfare disposal, as well as regional administrative penalties and environmental damage compensation, have an impact on environmental public welfare punitive damages, and the relationship between regional environmental restoration and governance deterrence. The results show that there is a positive correlation between public welfare punishment and departmental collaboration on environmental restoration, which is helpful to improve the credibility of environmental governance and play a deterrent role in law. Regional environmental public interest punishment has obvious regional autonomy, but it needs to be positively correlated with the two under the legal framework of the Administrative Punishment Law of the People's Republic of China. There is a significant positive correlation between punitive damages for ecological and environmental welfare, social governance, environment, and public cognition, and the two promote each other. In general, punitive damages for environmental public welfare should be in accordance with national laws, combined with

regional governance, and give full play to the deterrent effect of the law to provide support for regional environmental protection.

Keywords: regional law; local autonomy; local laws; environmental public welfare; punitive damages; legal attributes; Attribution

1. Introduction

From the perspective of local governance, punitive damages can facilitate environmental protection, but their legal attributes have a dual nature, punitive damages must comply with the Administrative Punishment Law of the People's Republic of China, but also conform to the actual local situation, but the ultimate attribution of dual legal attributes is to play the role of legal deterrence and social governance(Bernasconi, C., 2023), so it has important social governance and legal significance. In terms of regional attributes, the legal attributes are the embodiment of the local enforcement practice of national laws, and the deterrent effect of national public interest punitive damages can be brought into play by combining the punitive implementation conditions of the region, to facilitate better local management and environmental protection. Some scholars believe that the legal right of punitive damages for environmental public welfare is conferred on the state(Bravo, G. P., et al., 2023), the local government is the executor of the legal right, and the public is the beneficiary of the law. However, punitive damages for environmental public interest should comply with the basic principles of the law and protect the public rights and interests of the public(Chen, S. J., et al., 2022). Therefore, applying punitive damages for environmental public welfare is complex, but it is mainly within the scope of social governance and the main means for local governments to carry out social governance.

At the same time, the local government will supplement the punitive damages based on the local environmental conditions, development conditions, and environmental public welfare needs. The dual legal attributes help balance the needs of the state, the locals, and the public for environmental protection, thereby promoting the sustainable development of the local environment and the balance between the state and the local government. Regardless of whether it is national or local, the attribution of punitive damages for environmental public welfare is consistent, mainly to give full play to the punitive and deterrent nature of the law, deepen the governance of the local environment, and also enhance the public's understanding of punitive damages, so as to promote local laws and systems to be more scientific and systematic(Cheng, H. W., and Y. Feng, 2023), and effectively solve the relationship between legal punishment and environmental protection. Some scholars believe that environmental public welfare punitive damages involve social, national and local aspects, and its main principles are applicability and reasonableness, its scope of adaptation should be increased as much as possible and meet the requirements of various aspects so as to enhance the rationality and fairness of the law and promote the stability of local governance. In terms of the state's guidance on local social governance(Cheng, X. Y., et al., 2022), assessing the relationship between local legal attributes and the national legal framework is helpful to ensure the play of environmental public welfare, carry out environmental governance more efficiently, reduce the incidence of excessive punishment, and improve the management level of local governance. As a supplementary law, punitive damages for the environmental public interest should focus on deterrence and reduce the

severity of punishment. However, appropriate financial penalties should also be imposed based on the funds to restore and protect the environment. At the same time, punitive damages for environmental public welfare have both local and national legal attributes, which are of great significance for clarifying the direction of national environmental protection, the exertion of environmental public welfare, and the satisfaction of the needs of the public. By defining the legal attributes and attribution of environmental public welfare, we can provide experience for local environmental protection and governance, deepen the public's understanding of punitive damages, promote local governments to apply the principle of punitive damages better, and improve the effectiveness of local governance.

2. Literature review

2.1 The scope of regional adaptation of public interest punitive damages

Environmental public welfare punitive damages refer to the basis for the management, legal enforcement and departmental coordination of environmental public welfare punitive damages by the local government, and are the provisions of the national law to be implemented at the local level(Egede, L. E., et al., 2024), so as to facilitate a series of disposal and management of local environmental public welfare activities. Punitive damages include ensuring the implementation of environmental laws and regulations, providing good service support for local governance with the normal operation of regional environmental protection work, and meeting the needs of the public for the environment(Guimond, F. A., et al., 2023), as well as the smooth progress of environmental governance. Therefore, punitive damages have a wide range of applications, mainly playing a guiding role. However, there are bottlenecks in environmental punitive damages, the state cannot fully grasp the local and regional environmental conditions, and there are differences in local homestays, folk customs and public perception, so punitive damages cannot be further promoted. Therefore, local governments need to adjust the content and disposal mode of environmental public welfare punitive damages under the national legal framework in light of the actual situation(Henson, A., et al., 2023), avoid simple enforcement methods(Iordachescu, G., and M. Vasile, 2023), strengthen assistance between different departments, meet the needs of local governance development and environmental construction, and present diversification, sharing, and innovation, to become a booster for the development of national public welfare(Iscanoglu, Z., et al., 2024). Increasing the degree of local freedom in environmental governance is the main direction of punitive compensation for environmental public welfare in the country and one of the key paths of local environmental governance.

2.2 Legal authority of punitive damages

In the implementation of punitive damages for environmental public welfare, legal attributes and attribution have become the key, and the clear subject is the local government. Local governments shall, under the constraints of the national environmental legal framework, clarify the scope of the application of punitive damages, and increase publicity on the legal attributes so that the public can understand the legal attributes of public interest punitive damages(Kedward, K., et al., 2023). At the same time, the legal attribution of punitive damages by the state should be consistent with the legal attribution of the local government, both to improve the public welfare of the environment and promote the improvement of the level of local environmental governance.

Under the framework of the national environmental law, the local government should appropriately revise the content of punitive damages and limit the scope of application to give full play to its legal attributes to enhance the authority and deterrence of the law. Local governments' understanding of the attribution of punitive damages should be twofold. On the one hand, punitive damages should meet the needs of local environmental protection and social governance(Lampert, A., 2024), and be integrated with environmental protection and public welfare, green cultural organizations, and government organizations in combination with local environmental conditions. Local punitive damages are the main basis for regional environmental protection public welfare activities and are also the prerequisite for promoting environmental governance.

2.3 The relationship between punitive damages and the state, local and the general public

Punitive damages are the future of the sustainable development of national and local governance, and it is necessary to uphold the principles of fairness, pluralism, deterrence and development coordination strengthen the construction in environmental policy formulation(Lei, X., et al., 2024), local governance, coordination of government departments and meet the needs of public social management, and take punitive measures against the society guided by environmental friendliness, social responsibility and effective policy implementation. The core goal of punitive damages is to enhance the prestige and deterrence of the law, reduce the realization rate of punitive damages, and aim to create a good social governance environment so that the coordinated relationship between the state and the local government can be balanced and satisfied. The concept of punitive damages originates from the reflection on the traditional environmental governance model, which believes that the traditional poor social governance may lead to chaos among government departments, the decline of the level of social governance(Leonelli, G. C., 2022), and affect the public's cognition. Therefore, punitive damages try to clarify the basic needs of the public for the environment, enhance the deterrence and authority of the law, improve the awareness of the local public, and create a good governance environment(Li, F. Y., et al., 2022). The concept of punitive damages has received more and more attention and support from governments and social organizations worldwide, providing inspiration for local environmental governance. Local governments should clarify the objectives of punitive damages, improve the degree of freedom of enforcement according to their own circumstances(Li, M., et al., 2022), and propose more policies and management strategies that meet the requirements of local governance so as to reduce the negative impact on the environment in the process of local development and construction, improve the implementation effect of national environmental governance laws, ensure the long-term sustainability of national and local governance policies, and improve the governance environment by improving public awareness.

3. Theoretical analysis

In this paper, we clarify the legal attributes and attribution of punitive damages, conduct a hypothesis regression analysis, and put forward the following hypotheses for the state, local and the public through reference literature and expert investigation, and verify the analysis.

3.1 Research hypothesis

Based on the legal basis of punitive damages, local implementation requirements, and the national legal framework, their legal attributes and attribution (Michalovicz, D. T., and P. Bilotta, 2023). Among them, the relevant policies and laws on punitive damages include environmental civil public interest penalties, environmental administrative public interest penalties and ecological and environmental damage compensation. From this, hypotheses can be proposed:

Hypothesis 1 (H1): Whether the Administrative Punishment Law of the People's Republic of China, as a national legal framework, has guidance on punitive damages and the effect of local freedom of enforcement on local environmental governance.

Hypothesis 2 (H2): Whether the enforcement effect of punitive damages is relevant to local safeguard policies and public awareness of environmental protection.

Hypothesis 3 (H3): The interpretation of punitive damages by local legal institutions can promote the improvement of environmental protection policies and public awareness and improve the effectiveness of local environmental protection governance.

3.2 Explanation of Research Variables

The model of multiple linear regression model was carried out by taking the effect of local environmental governance as the dependent variable (Moosavian, S. F., et al., 2022), the national environmental governance law, the degree of freedom of implementation of local punitive damages, the public's perception of punitive damages, and the interpretation of punitive damages by regional legal institutions as independent variables. In the actual case analysis, the legal attribution and attributes of punitive damages are analyzed by using the fit, reliability, validity and freedom as auxiliary coefficients, as shown in Table 1.

Table 1 Variable names

Table 1 covers the legal attributes and attribution of punitive damages, as well as the three scopes of national, regional and public, with the aim of sustainable local environmental public welfare management and analyze the deep-seated causes of local governance by clarifying that legal attributes are related to attribution. Among them, the effect of local environmental governance is the dependent variable, which is obtained through the connection with the national legal structure, different local departments, and the widespread perception of the people. The dependent variable reflects the attribution of punitive damages, represents the enforcement goal of the law, and is the result of both national and local enforcement. Civil public interest penalties, administrative public interest penalties and compensation for ecological and environmental damage are defined as the degree of freedom in the enforcement of local punitive damages, and the data are from the enforcement and management departments of environmental public interest punitive damages, respectively, to provide information on the effect of environmental public interest punitive damages. The study of independent variables such as legal institutions and the public helps understand the enforcement guarantee and sustainability of environmental public welfare punitive damages. The attribution and legal attributes of environmental public welfare penalties are listed as control variables, mainly because the in-depth analysis of the two can change the scope of application of the independent variables and the local enforcement authority of national laws. The

influence of the control variables on the independent variables is obvious, so it is necessary to refer to the potential results of the control variables on the punitive damages for environmental public welfare, to more comprehensively consider and analyze the possible impacts between national environmental laws, local environmental governance and the public.

3.3 Descriptive Statistics

Questionnaires were distributed to ethnic minority areas through questionnaires and interview outlines, and the surveyors were government officials, community directors and law firm leaders. 300 questionnaires were distributed, and 290 were recovered, with a recovery rate of more than 99%. The survey was conducted as a combination of online and offline surveys, excluding irrelevant questionnaire data, and the following results were obtained, as shown in Table 2.

Table 2: Descriptive statistics

As can be seen from Table 1, the specific presentation results meet the requirements, the survey results do not have large differences, and the data values are within a reasonable range, and the variability analysis of the results is carried out. In Table 1 descriptive statistics, the mean value of NL as the dependent variable is 4.202, and its standard deviation is 0.131, and the degree of NL variability is relatively small. ND, NE and NS were taken as independent variables, and the minimum, maximum, mean and standard deviations were 4.195 ± 0.131 , 4.194 ± 0.130 and 4.213 ± 0.125 , respectively, and the coefficient of variation was relatively small. The mean and variance between GS and LS are the same, but the coefficient of variation is large, indicating that the attributes of punitive damages have significantly changed, mainly regarding the interpretation power of local governments to the law. There is no dispute about the attribution of punitive damages, which indicates that the goal of punitive damages is to improve the effect of local environmental governance, and the local government should take the national laws and regulations as the framework to carry out a certain degree of legal interpretation and promote the implementation of national laws.

4. Empirical analysis and results

4.1 Reliability and validity analysis of survey results

To improve the validity of the survey results, the reliability and validity of the results were analyzed, and the specific results are shown in Table 2.

Table 2 Analysis of the validity of the survey results

Note: If the numbers in the table are colored, blue means that the absolute value of the load factor is greater than 0.4, and red means that the commonality (common factor variance) is less than 0.4

The results in Table 2 show that there are controversies in the survey results regarding local environmental governance and local freedom over punitive damages, so it is necessary to analyze the survey hypothesis as a whole, as shown in Table 3.

Table 3 Overall validity of the survey results

As can be seen from Table 3, the validity of the survey results meets the requirements of 0.788, which is greater than 0.7, indicating that the survey results can be analyzed and calculated later. The reliability analysis found that the survey result was 0.756, which was greater than 0.7, which could be calculated later. At the same time, the weights of different assumptions should be analyzed to verify the weights of each index and avoid weight bias, as shown in Table 4.

Table 4 Comparison of weights

The results of the weight survey from 4 show that the weight deviation is small, and the maximum special value is 4, which is almost close to 5, and the consistency is 0, indicating that each index can be hypothetically calculated in the later stage.

4.3 Regression results for different hypotheses

The regression results are analyzed for the hypotheses presented in this paper, as shown in Table 5.

Table 5 Regression results for different assumptions

Note: → indicates that the path affects the relationship

As can be seen from Table 5, LS→LP, GS→LP and NL→LP are negative values, indicating that the three contents hurt punitive damages, while law, social cognition and legal guarantee, as well as legal attributes all have a positive effect on punitive damages. Among them, the coefficient value of the local government's freedom of implementation is 0.095, indicating that the degree of local government's freedom of implementation can more clearly define the legal attributes and attribution. The state should improve the regional autonomy rights of local governments, improve the effect of environmental public welfare punishments, and improve the public's awareness of punitive damages. In addition, there was no significant difference in the SE and z values between different variables, and the P value was greater than 0.05, indicating that there was no correlation between the assumptions, indicating that the interpretation of the law, the public cognition, and the freedom of enforcement of local governments all had an impact on the implementation of punitive damages for environmental public welfare, and the legal attributes could be clarified. However, there is a weak correlation (0.89) between the legal attribution issue and environmental public interest punitive damages, indicating that the ownership of punitive damages still belongs to the state, but local governments need more freedom to achieve effective governance of environmental protection. Indirectly, local governments have certain constraints on environmental governance, and the policies formulated cannot meet the needs of social management, especially in the interpretation and deterrence of punitive damages.

4.4 Regression analysis

According to different hypotheses, the fitting analysis was carried out to analyze the legal attribution and attributes of punitive damages, and to judge the impact of public perception(Pulvers, K., et al., 2022), national policy and local government freedom on the implementation of compensation, as shown in Table 6.

Table 6 Degree of fit for different assumptions

In Table 6, the degree of fit between the different hypotheses is relatively ideal, which shows that there is a positive correlation between the different hypotheses and the local governance environment, which verifies the rationality of the hypotheses proposed in this paper and the relationship and coefficients between the different hypotheses are shown in Figure 1.

Fig. 1 Correlation coefficient between different assumptions

In Figure 1, the coefficients of NL, LP, NS, etc., are similar but slightly changed, there is no correlation between different constructions, but there is still a positive correlation with the dependent variable, and the attribution of punitive damages still shows a large fluctuation, indicating that there is a significant variation in the control variable, which is a moderating factor in all assumptions. The explanations of the three independent variables for punitive damages for environmental public welfare all showed a significant positive correlation, while the LS change in the control variable had a slightly different impact on the independent variable, and the overall moderation change is shown in Table 7.

Table 7 assumes the adjustment process of the variables (n=299).

Note: Dependent variable = LP; * $p < 0.05$ ** $p < 0.01$

As can be seen from Table 7, the independent variable has a significant correlation with the dependent variable during the adjustment process, which promotes the development of the dependent variable. Among them, the change of LS itself is relatively large, and has a significant impact on the dependent variable's positive nature and degree of influence. Among the independent variables, NE and NL both play a significant role, indicating that the local government's freedom of enforcement of punitive damages and the legal interpretation of compensation by the judicial department can enhance the authority of laws related to environmental public welfare, enhance their deterrent effect on the public, and provide support for local environmental governance.

4.5 Centralized analysis of hypothetical analysis results

Therefore, it is necessary to judge the centrality of the results and analyze the attributes and attribution of different results to obtain the influence of attributes and attribution on the governance effect in the process of local environmental governance, as shown in Table 8.

Table 8 Centers of change for different hypotheses

Note: Average profile factor = 0.040

As can be seen from Table 8, it is assumed that there is no large fluctuation in the legal attributes, but there is a large fluctuation in the attribution, indicating that the attribution issue is still the key to enforcing punitive damages by local governments. Among them, the freedom of local government and the judiciary interpretation are the main moderating independent variables. This

illustrates. Local governments' interpretation of punitive damages and the freedom to enforce the national environmental public interest compensation law are key. The following hypothesis results can be obtained by combining the above analysis results, as shown in Table 9.

Table 9 Summary of hypothetical results

As can be seen from Table 9, the assumptions of the results of this paper are all valid, indicating that the local government's freedom of enforcement of punitive damages, and the interpretation of compensation by the judiciary can promote the improvement of the effect of local environmental governance, improve public awareness, and improve the local environment and give full play to the public welfare of environmental governance. Based on the above analysis, assuming that H1, H2 and H3 are initially supported, the relevant policies of compensation enforcement are conducive to playing a role and enhancing legal deterrence. Among them, the legal attributes are very clear, but the ownership is ambiguous, and the ownership power should be given to the local government by improving the freedom of local government enforcement, so as to facilitate better legal enforcement, but the right to formulate the compensation law should be attributed to the state.

5. Conclusions and Recommendations

5.1 Increasing the freedom of local governments to enforce punitive damages is conducive to the advancement of punitive damages

The punitive damages system has both the two-way function of national law formulation and local enforcement, and the focus of the performance function of the punitive damages system is not the same in different legal scopes, so it is necessary to improve the degree of enforcement freedom of local governments, and better adjust the compensation intensity in combination with the local judicial situation and the environmental situation. Among them, to enhance the government's freedom of implementation, is to uphold the principle of proportionality of punishment, facilitate local environmental governance, and improve the public welfare of the environment. At the national level, more refined design should be carried out at the level of institutional design, the enforcement rights of local governments should be appropriately liberalized, and the content of compensation should be supplemented to ensure that punitive damages play a deterrent role. Therefore, local governments need to further optimize systems and policies, and implement the national punitive damages law to the greatest extent through scientific management and planning. At the same time, local governments should adopt supplementary policies and regulations to improve environmental protection and reduce the frequency of policy changes. In addition, through reasonable policy implementation, the efficiency of compensation disposal can be improved, the efficient disposal of environmental protection incidents can be ensured, and local governance can be promoted. Form a balance between local governments and national laws, reduce the unfavorable constraints of the national legal framework, enhance the freedom of local governments, better carry out local environmental governance, and promote the development of environmental public welfare.

5.2 Interpreting the judicial content of punitive damages is conducive to clarifying the legal attributes and attribution

Improving the legal content of punitive damages for public interest, and improving the content in light of the actual local situation, can more clearly define the legal attributes and attribution, and clarify the enforcement power of punitive damages. The adoption of more comprehensive laws and regulations can reduce disposal costs, improve disposal efficiency, and reduce the occurrence of environmental pollution and ecological damage incidents. By improving the content of the law and comprehensively interpreting the compensation law, punitive damages can not only gain the effect of legal enforcement from the enforcement level, but also gain high support in terms of public awareness, so as to enhance its legal deterrence in the outside world and achieve sustainable enforcement. The improvement of legal attributes and attribution in terms of punishment content not only has a positive effect on the local implementation of national laws and regulations, but also has a great help in the integration of national laws and local regulations. In the actual punishment process, local governments can increase supervision in areas such as ecological environment and resource protection, water safety, land resource protection, and the transfer of mine use rights. At the same time, the people's procuratorates of administrative organs with supervision and management responsibilities initiate procuratorial work to formulate laws and regulations, so that they can perform their duties in accordance with the law, and promote assistance between different departments. By improving the content of punitive damages, the cost of environmental public welfare protection has been reduced, and the efficiency of its disposal has been improved, giving full play to the enforcement capacity of local governments. In addition, through the implementation of a positive environmental public welfare punishment policy, it is not only in line with the principles of local environmental governance, but also in line with the country's expectations for local environmental friendliness, and establishes a green image of laws and regulations.

5.3 Increasing the publicity of punitive damages can improve the governance conditions of local environmental public welfare

The disposal of compensation for ecological and environmental damage is applicable to the occurrence of large, major and particularly major environmental emergencies, so the public has less understanding of punitive damages. Local governments should increase publicity, conduct case and content analysis, and improve the public's understanding of the issue of compensation; Local governments play an important role in the implementation of punitive damages at the national and local levels, and should increase the publicity of relevant laws to ensure that environmental pollution and ecological damage occur in key ecological function zones and prohibited development zones. In terms of the disposal of environmental punitive damages, it can take the form of public trial and publicity, which is the main opportunity for the implementation and publicity of environmental protection, and the case of environmental protection is promoted to the life of the public, which is conducive to improving the relevant content, enhancing the public's awareness, and also helping to increase the public's participation in the environment and avoid the further expansion of environmental damage. Therefore, increasing the publicity of punitive damages is in line with the concept of environmental protection, and it is more important to enhance the participation of the public in protection, so as to create good conditions for environmental governance. Increasing the publicity of punitive damages can achieve sustainable protection, contribute to the development of local environmental protection governance, and also

provide support for the implementation of national environmental public welfare punitive damages, which has the feasibility and practical value of social management.

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