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How greenwashing influences formal and informal institutional benefits in China

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Abstract: Enterprises are likely to adopt the greenwashing approach to obtain institutional benefits under an imperfect institutional background. Using panel data on Chinese enterprises from 2010 to 2015, we examine the possibility of enterprises obtaining formal and informal institutional benefits through greenwashing in China. Moreover, from the perspective of government enterprise relationships and social enterprise relationships, we show that government enterprise relationships positively regulate the relationship between greenwashing and formal institutional benefits, and public attention will weaken the positive relationship between greenwashing and informal institutional benefits. These results provide important implications for the relationship between greenwashing and institutional benefits and further highlight the value of government guidance and supervision of enterprises' greenwashing.

Keywords: greenwashing; formal institutional benefits; informal institutional benefits; government enterprise relationship; social enterprise relationship.

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1 Introduction

The rapid economic growth is accompanied by environmental deterioration, excessive consumption of resources and other issues. In recent years, governments have gradually paid more attention to the ecological environment, raising environmental issues to the national strategic level. Enterprises play an important role in promoting environmental protection, having the ability to consume resources and produce issues which will influence the ecological environment. Enterprises are important actors in environmental governance (Korten, 1998). Due to the public nature of environmental resources, enterprises, as rational economic agents, are likely to harm environmental resources in order to maximise their benefits in the process of pursuing business target. At the same time, the phenomenon of ‘hitchhiking’ causes enterprises to take opportunistic measures to gain profits (Yoffie, 1987). Given the coexistence of great institutional benefits and imperfect supervision mechanism in emerging background, some enterprises are prone to take greenwashing to cater to external demand. Greenwashing refers to the situation that the symbolic behaviour of environmental protection does not match the substantive action of the organisations (Walker and Wan, 2012). The externality of the environment determines that the market mechanism cannot always play an ideal role in maintaining economic benefits and ecological environment protection. Given such situations, the institutional environment is particularly important to reduce greenwashing. It can be restrained by institutional norms to avoid greenwashing behaviour of enterprises. Whether an enterprise can obtain institutional benefits under the institutional norms is vital, for institutional benefits can help achieve sustainable development. Therefore, we are concerned about whether enterprises can obtain formal institutional benefits from the government and informal institutional benefits from the public market through greenwashing behaviour under the realistic background of imperfect institutional norms. At the same time, we are also concerned about whether China’s social relations have affected the realisation of enterprises’ obtaining institutional interests through improper behaviours.

This research contributes to extant greenwashing literature in several parts: First, our research enriches the literature on the economic consequences of greenwashing behaviour and organisational legitimacy. The existing research on the economic consequences of greenwashing mainly focuses on the influence on brand reputation, financial performance and stock return rate in capital market, while there are few studies on the combination of enterprise greenwashing and institutional theory. Secondly, we provide the motivation for enterprises to adopt greenwashing. Previous studies have focused on the antecedents of greenwashing to find the blocking mechanism, but there are few studies focusing on the inhibitory factors in the process. Thirdly, aiming at government-enterprise relationship and social-enterprise relationship, we find that greenwashing of enterprises can be effectively restricted from the perspective of supervision and public guidance.

2 Theoretical framework

2.1 Greenwashing

Due to the asymmetric information, inadequate supervision and weak punishment, greenwashing of enterprises is relatively common (Lyon and Montgomery, 2015). From

the perspective of marketing, greenwashing refers to a kind of marketing behaviour in which an enterprise's substantive environmental protection actions are inconsistent with the propaganda slogan. Greenwashing mainly reflects in the aspects of production and environmental protection practices (Parguel et al., 2011). From the perspective of information transmission, greenwashing refers to the behaviour of enterprises to build public images by publishing false information (Bowen and Aragon-Correa, 2014). Based on existing studies (Walker and Wan, 2012; Weaver et al., 1999), we define greenwashing as the decoupling between symbolic and substantive environmental behaviour, that is, enterprises take more symbolic actions. Under the institutional background, enterprises may symbolically abide by the norms in order to cope with the institutional pressure and cater to external expectations (Zhang et al., 2022).

Research on greenwashing's motivation was mainly based on three perspectives. From the perspective of neoclassical economics, enterprises pursue profit maximisation. Greenwashing can reduce the cost of performance and become a choice for enterprises to pursue economic benefits. When the social supervision system and the governance mechanism are imperfect, the possibility of greenwashing being exposed is low. At the same time, opportunism and external pressure will prompt enterprises to take risks in greenwashing (Kim and Lyon, 2015). From the perspective of information economics, due to the typical information asymmetry of green market, the green attribute of products or services cannot be completely determined. Therefore, enterprises are more likely to provide false information in the process of operating. At the same time, consumers' lack of awareness of greenwashing makes it difficult to identify false information (Delmas and Burbano, 2011). From the perspective of Stakeholders, some demands of stakeholders often encourage enterprises to engage in speculation. (Kim et al., 2017). Enterprises usually adopt greenwashing to achieve the target of participating in policy advocacy, obtaining social certification, and applying for green labels (Walker and Wan, 2012).

However, the exposure of greenwashing will have various effects on enterprises, mainly including the enterprise reputation, financial performance and stock performance. It is pointed out that the irresponsible social behaviour of enterprises is likely to lead to public distrust after being recognised (Leonidou et al., 2013). Once the corporate green drift behaviour is disclosed, it will seriously affect the financial performance (Wu and Shen, 2013) and lead to the decline of stock value and overall market performance (Marquis and Toffel, 2012).

Greenwashing of enterprises also has an impact on the economy and society. First, greenwashing will lead to social distrust, which will affect the subsequent judgement on corporate actions and image (Jahdi and Acikdilli, 2009). Second, greenwashing will lead to the prevalence of lemon market. The external market is likely to lead to an increase in adverse selection under the condition of information asymmetry (Febi et al., 2018). Third, greenwashing weakens the effect of the implementation of the government's environmental legislation policy and the due protection of the policy (Delmas and Montes-Sancho, 2010; Xu et al., 2022).

2.2 Institutional theory

Institutions can restrict organisational behaviour (North, 1991). Institutional environment determines the difference of organisational efficiency, which can be divided into formal institutional environment and informal institutional environment. Greenwashing can be explained from two aspects. First, under the governmental supervision, enterprises adopt

greenwashing in order to respond symbolically to regulations and obtain institutional support that they should not have. Second, opportunism cannot be suppressed when the institutional environment is not strictly controlled. Enterprises can obtain external support at a lower cost, especially when the supervision system is imperfect. The research of Bondy et al. (2008) shows that the social responsibilities of enterprises in different institutional environments are quite different. Therefore, the role of institutional environment in the process of enterprises taking greenwashing to obtain benefits is worth exploring.

2.3 *Signal transmission theory*

Information asymmetry affects the transmission of information, which in turn affects the choice of enterprises' behaviour. Signal transmission theory can effectively alleviate information asymmetry and help transmit information and balance market information effectively (Bae et al., 2018). Based on signal transmission theory, external group has limited cognition of the substantial green actions and symbolic ones of enterprises. The false signals released by enterprises' green drift behaviour to the market will affect the judgement of external stakeholders. Second, due to similar label and cognition, green enterprises and enterprises taking greenwashing may both transmit positive signals. Third, the information of greenwashing is difficult to be effectively screened.

2.4 *Institutional environment and institutional benefits*

Institutional environment refers to the sum of the factors of formal system and informal system that affect the economy in a region, including a series of governance, legal system, economic and social environment related to production, exchange and distribution (Scott, 2012). The external environment is an important condition for organisational function. In the framework of enterprise embedding system, the system can be divided into external institutional environment (political, legal and social norms that affect regional production) and internal institutional arrangement (internal corporate governance), that is, the sum of the systems and mechanisms formed by enterprises to safeguard their own benefits.

Most studies of formal institutional environment focus on the impact of government intervention on the economic performance of enterprises (Guerrero and Urbano, 2020). Through measures such as intervention and control, the government has a profound impact on the decisions of enterprises. Therefore, the relationship between government and enterprises is an important part of formal institutional environment. The government should play its own role in the market economy, vigorously develop the market economy, control the behaviour of enterprises under the institutional environment, and formulate an effective supervision and management system.

Informal environment refers to the external social and cultural environment, including the relationship between society and enterprises. Public attention is an important part of such society-enterprises relationship. Effective attention of the local public to the environmental protection actions of enterprises is conducive to building a better informal institutional environment with more effective judgement, restriction and supervision of enterprise behaviour.

Enterprises gain institutional benefits through various behaviour in the institutional environment. Institution benefit, which originates from institutional theory, refers to

formal and informal benefits from inside and outside. Enterprises must make strategic decisions and pursue their own benefits under formal and informal institutional constraints (Davies et al., 2019). Existing studies had emphasised the importance of institutional benefits, however, there was relatively few studies on how to obtain institutional benefits in the above situations.

Under the background of China, the government is responsible for the formulation and implementation of laws. Therefore, government support is an important formal institutional benefit. Government support provides enterprises with access to scarce resources and preferential treatment. Moreover, it has considerable control over economic activities in the form of various policies such as tax relief and subsidies (Alkahtani et al., 2020). Due to the typical institutional defects in emerging markets, government support, as a formal institutional benefit, plays an important role in enterprises (Shu et al., 2016). Informal institution is rooted in social communication and social relationships to a great extent. Social recognition, as a necessary informal institutional benefit (Yi et al., 2020), refers to the things or behaviour be widely accepted by the public in the value system constructed by society. Enterprises with high social recognition are more likely to build a noble brand image and gain social confidence (Lin et al., 2021). In short, enterprises may engage in symbolic management to gain recognition from the external environment, especially the trust of the government and the public. Greenwashing is a measure for enterprises to cope with external pressure, aiming at obtaining government support and social recognition within the scope of legality (Delmas and Burbano, 2011).

To sum up, we define the institutional environment as the environment of the local region and divides it into formal institutional environment (the relationship between government and enterprises) and informal institutional relationship (the relationship between society and enterprises). Institutional benefits are divided into formal institutional benefits (recognised by the government) and informal institutional benefits (recognised by the society). We take the local government-enterprises relationship as the measurement dimension of the formal institutional environment and social recognition as the measurement dimension of the informal institutional environment.

2.5 Summary

After reviewing the previous literature on greenwashing and institutional theory, we find some research gaps. First, the main purpose of enterprises' greenwashing is to obtain formal and informal institutional benefits. This influence mechanism will be influenced by corporate social relations in Chinese specific background, including government-enterprises relationship and society-enterprises relationship. However, the previous research rarely involves the joint action between them. In this study, we will explore the internal ways for enterprises' greenwashing to obtain institutional benefits mainly from the perspective of institutional theory, and analyse the influence of the relationship between enterprises and the external environment on greenwashing. Second, the existing academic studies on greenwashing focus on the antecedent (what caused greenwashing) and the consequence (the impact of greenwashing on the enterprise after exposure), but rarely discusses the effect of greenwashing on the enterprise. This study analyses from the institutional perspective, trying to explain what enterprises will get when they adopt greenwashing, how to get it and the corresponding influencing factors.

3 Hypotheses

3.1 *Enterprise greenwashing and institutional benefits*

3.1.1 *Greenwashing and formal institutional benefits*

Under the institutional environment, enterprises need to achieve economic profits and gain recognition under institutional norms. Enterprises will adjust their strategies and behaviour according to the government's expectations and regulations for government support, such as environmental protection subsidies or environmental protection awards. The government will provide preferential policies and exclusive resources for enterprises adopting green management. Enterprises regarded as green models have more opportunities to communicate with the government to get more unique support. However, some enterprises' actions are different from their promises, resulting in the phenomenon of greenwashing. Government support provides enterprises with access to scarce resources (Long et al., 2020).

Enterprises adopt greenwashing, hoping to symbolically satisfy the government's expectations and policies to gain specific support of the government on the premise of paying low cost. In the period of imperfect system, enterprises will choose different market strategies due to their own conditions (Peng, 2003). Especially in transition economies, the weak institutional environment hinders the growth of corporate environmental strategies (Kadriu et al., 2019). Faced with the imperfect supervision mechanism at present, the relatively loose market order leads to lax supervision of enterprises, which increases the freedom of symbolic behaviour of enterprises to some extent, thus making it easier for enterprises to respond to environmental problems with symbolic environmental strategies (Connelly et al., 2011; Li and Atuahene-Gima, 2001). Such strategies can effectively reduce the cost of green innovation and production with less investment and improve the anticipated profits of enterprises (Pimonenko et al., 2020). Therefore, when the supervision mechanism is loose, enterprises can set up a good image of social environmental protection through greenwashing, reducing the substantive green actions that should have been taken and just rely on the slogan and commitment to respond to environmental policies, that it is difficult to match commitments with actions, so as to obtain government support. Therefore, this paper speculates that:

H1a: Greenwashing behaviour of enterprises is positively associated with formal institutional benefits.

3.1.2 *Greenwashing and informal institutional benefits*

Social recognition, as an important informal institutional benefit, reflects the consistency of organisational behaviour with social values, norms and expectations (Suchman, 1995). As an external governance mechanism, social media evaluation restricts and guides the behaviour and business direction of enterprises. Enterprises will choose different ways to convey positive environmental protection signals. Through environmental protection practice, it shows that enterprises respect and strive to meet the standards of social norms, expecting their relevant stakeholders to form favourable evaluations.

Social public recognition, as an important factor, has a profound impact on enterprises. However, the public's recognition of enterprises will be influenced by the direction of public opinion (Cormier and Magnan, 2015), and the public is easy to be

induced to make untrue judgements under the condition of asymmetric information. In other words, it is easy for enterprises to use the media to publicise their positive environmental guardian image, so as to achieve a higher degree of social recognition. Greenwashing can conform to local system logic in performance and maximise profits for enterprises under the condition of low environmental protection investment. Therefore, greenwashing is regarded as a strategic response to the uncertainty of the external environment. The risks they face mainly include two aspects: First, in the process of government supervision, there is a risk of hiding the legal challenges associated with greenwashing from discovery; Second, the unknown informal pressure caused by the follow-up questions and challenges of stakeholders is unpredictable. In reality, the imperfect supervision of the government leads to the space for false propaganda. The public's ability to identify false publicity of enterprises is also limited. In the process of enterprises adopting greenwashing, although the public has information recognition ability to some extent, corporate commitment and public image can easily affect the public judgement ability. The public is prone to misjudge the corporate environmental image (Gray et al., 2020; Lyon and Montgomery, 2015). In this context, greenwashing can meet the multiple benefits of internal and external stakeholders, and its low cost and high confidentiality make this strategy attractive to enterprises, urging them to take risks to gain benefits (Morgeson et al., 2013). This also means that enterprises can conduct false publicity while carrying out green floating operations to gain public recognition. In other words, it is easy for enterprises to gain social recognition by building a green image in the way of greenwashing. Therefore, this paper speculates that:

H1b: Greenwashing behaviour of enterprises is positively associated with informal institutional benefits.

3.2 Moderating role of formal institutional environment: government-enterprise relationship

The relationship between government and enterprises refers to the close relationship between enterprises and the central and local governments, including the government's intervention and influence on enterprises. The closer government-enterprise relationship means that a closer strategic cooperative relationship has been established. In China, governments at all levels have the ability to manage enterprises and control resources arrangement. Most enterprises will choose to build a close government-enterprise relationship with local government to achieve the purpose of rent-seeking. The intimate relationship is more likely to affect corporate behaviour (Tian et al., 2019).

Existing studies have shown that enterprises that are closely linked with the government can gain greater benefits (Li, 2022). Due to the imperfect regulatory mechanism in China, it is more likely that enterprises will make use of the close relationship between government and enterprises to obtain more external government support through adopting greenwashing, such as environmental protection subsidies (Yang et al., 2021). Under the condition of closer government-enterprise relationship, enterprises that adopt greenwashing can not only get the latest inside information of the government, but also selectively disclose their green information to government organisations and even participate in the reform of government system, which makes it easier to gain more support and trust of the government. Research has also found that the relationship between government and enterprises can bring more information and

resources to enterprises under the condition that the quality of institutional environment needs to be improved (Hu and Shi, 2021). That is, under current institutional environment, a closer relationship between government and enterprises is more likely to bring more external support to greenwashing. Therefore, this paper speculates that:

H2: The moderating effect of local government-enterprise relationship on the relationship between greenwashing and formal institutional benefits is more positive when local government-enterprise relationship is closer.

3.3 Moderating role of informal institutional environment: public attention

Environmental governance needs the participation of different parties to complete. It is not only necessary to improve the overall planning ability of the central government and the supervision ability of local governments, but also to encourage the public to actively participate in environmental protection actions and environmental supervision, so as to optimise the effects of environmental governance in different regions (Fu and Geng, 2019). Research has pointed out that the reports on environmental issues in developing countries are increasing in recent years, which urges the public to participate in environmental governance. The environmental indicators published by enterprises were originally intended to provide information to help stakeholders assess and mitigate the risks of corporate reputation, laws and external supervision (Kotsantonis et al., 2016). In China, more and more people began to consciously express their concern about environmental pollution and the demands for environmental governance became stronger. Through public opinion, complaint or petition, enterprises can be promoted to fulfil their responsibilities of environmental governance. Public attention can also strengthen the central supervision of local authorities and help optimise environmental policies (Gu et al., 2021).

However, although there has been a significant assessment in the field of corporate environmental information (Hauska, 2019), there is still no generally accepted agreement and perfect supervision mechanism for assessment and supervision. There is also a lack of strict control over whether the company has made substantial contributions to society and the environment. At the same time, due to the information asymmetry between the public and enterprises, greenwashing behaviour is not easily recognised by the public (Gregory, 2021). Therefore, enterprises can create a green image by strategically disclosing environmental protection information and conveying actions that are difficult to observe (DesJardine et al., 2021), providing signals to important public groups and gain more social recognition. The public lacks sufficient ability to screen the publicity of enterprises. Even if enterprises take symbolic environmental protection actions, under the influence of media publicity and other means, it is easy for enterprises to establish a green environmental protection image among the public, although enterprises have not taken much substantive action. In other words, in the process of enterprises adopting greenwashing in the current institutional environment, when the public groups lacking enough knowledge and information pay more attention to the regional environmental quality, it is easier for enterprises to strategically meet public expectations and gain more public recognition through symbolic responses.

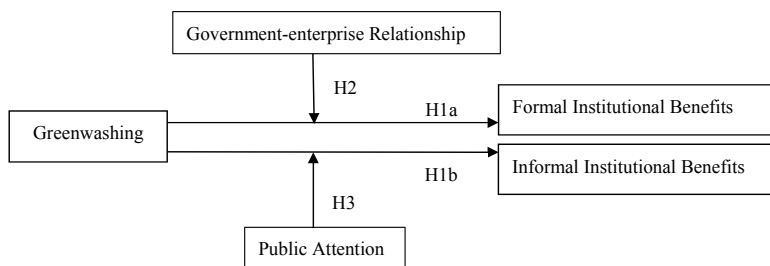
To sum up, the improvement of public attention does not always mean the strengthening of effective supervision of enterprises. Instead, enterprises can respond to the concerns of the public by adopting the greenwashing action, thus gaining more public

recognition and trust. That is, the higher the public's attention, the public mistakenly thinks that the social supervision has been effectively exerted, leading enterprises to reduce their behaviour that is inconsistent with their words and deeds. Under this background, enterprises can gain higher social recognition by adopting greenwashing. Therefore, this paper speculates that:

H3: The moderating effect of public attention on the relationship between greenwashing and informal institutional benefits is more positive when public attention is higher.

In summary, the theoretical framework of this study is constructed in Figure 1.

Figure 1 Theoretical framework



4 Methods

4.1 Sampling and data collection

Since 2010, the greenwashing data of Chinese enterprises in ASSET4 database has gradually increased. Meanwhile, at the executive meeting of the State Council in 2010, China discussed and adopted the mid-term evaluation report of the Eleventh Five Year Plan for national environmental protection. The report pointed out the importance to further clarify the responsibilities of the government and enterprises.

As the enterprise's greenwashing behaviour has a certain delay effect in obtaining institutional benefits, and we consider that six years is an appropriate time coverage span, therefore, we use the data from 2010 to 2015 mainly based on several database, containing detailed information about Chinese enterprises operating in China.

We process the samples and eliminate the following samples:

- 1 enterprises without greenwashing index data in ASSET4 database
- 2 ST and ST* enterprises
- 3 enterprises without any environmental news during the observation time
- 4 enterprises with missing variables.

Finally, 402 sample observations of 67 enterprises were obtained. In order to enhance the reliability of the research results and weaken the influence of extreme values on the research results, we windorise the tail of 1% and 99% quantiles of the main variables.

Greenwashing data is obtained from ASSET4 database. Environmental subsidies and environmental award come from the CSMAR database. Social evaluation is obtained

from China Core Newspaper Full-text Database (CCND). The local Government-enterprise relationship is measured by “the relationship index between government and market” in China Marketization Index every year. Public attention is obtained from China Environmental Statistics Yearbook, measured by the number of complaints from the local public. Financial data is obtained from WIND database.

4.2 Variable definition and measurement

4.2.1 Greenwashing (GW)

According to the research of Walker and Wan in 2012, greenwashing is the decoupling between green propaganda and green action, that is, the mismatch between substantive environmental behaviour and symbolic environmental behaviour. With the help of ASSET4 database, we obtain the specific scores of symbolic and substantive environmental behaviour of enterprises. The greenwashing is measured by the ratio between symbolic green behaviour and substantive green behaviour. The larger the ratio, the higher degree of greenwashing is (Roulet and Touboul, 2015).

4.2.2 Formal institutional benefits (FIB): government support

The formal institutional benefits obtained by enterprises mainly include the government support, environmental subsidies and award for enterprises (Xiao et al., 2013). Government support refers to various forms from the government and its administrative departments, including tax relief, subsidies and specific projects and policies aimed at promoting certain behaviour (Li and Atuahene-Gima, 2001). The government environmental subsidy can directly supplement the enterprises’ resources for environmental technology innovation (Chen and Yang, 2019). Environmental subsidies and award can also provide monetary support and motivation for environmental technology innovation (Lin et al., 2015).

Using the views of existing scholars for reference, we combine the environmental subsidy in the non-operating income with the environmental honour and reward disclosed in the annual reports of listed enterprises, that is, whether the enterprise receives environmental subsidies or environmental rewards is used as an indicator to measure government support.

4.2.3 Informal institutional benefits (IIB): social recognition

As an informal institutional benefit, social recognition enables enterprises to gain public trust. Public opinions can reflect the degree of social recognition to some extent. Research regards public media reporting as a significant form of public opinion supervision (Cormier and Magnan, 2015). In this research, the content analysis method is used to collect and sort out the environmental management report information required by the sample enterprises from 2010 to 2015 from the full-text database of China’s core newspapers (CCND) by manual statistics. Influential journals are selected as the data sources of media reports. News extraction, word segmentation and emotional orientation labelling are carried out. In order to avoid endogenous problems, all the news reports of the company (excluding the government and enterprises themselves) in the newspaper in the previous year are used, and the ratio of the number of positive news reports to all news reports is used to measure the social recognition level of the company.

4.2.4 *Relationship between enterprises and government: government-enterprise relationship (GER)*

There are various ways to measure the relationship between government and enterprises in the formal institutional environment. Most domestic scholars usually use the index of marketisation degree to measure the institutional environment. The most widely cited is Fan Gang's "China Marketization Index", including the comprehensive ratio of budgeted income of prefecture-level cities to budgeted income, the proportion of non-state-owned employment, the ratio of government expenditure at all levels to regional GDP, etc. Based on relevant research, we choose the index of "the relationship between government and market" in China Marketization Index.

4.2.5 *Relationship between enterprises and the public: public attention (PA)*

Due to different research perspectives, domestic scholars have different measurement methods for the research on the relationship between enterprises and the public, mainly including measuring by questionnaires, online text analysis, residents' letters and complaints in public feedback, investigating the influence of public attention on online public opinion, online search and environmental concern. In order to avoid the interference of factors such as region, sample size, number of specific people, etc. We measure the regional public attention according to the official environmental complaints of the same grade from the annual environmental inspection of China (Dasgupta et al., 1997).

4.2.6 *Controls*

Control variables and related measurements are as follows.

- 1 Enterprise size (Size): expressed by the natural logarithm of the total assets at the end of the period.
- 2 Age of enterprise (Age): expressed by the natural logarithm of the time from the establishment of the enterprise to the year of observation.
- 3 Growth rate of enterprise (GR): expressed by the growth rate of total operating income of enterprises in the current period;
- 4 ROA (ROA): expressed by the total return on assets of an enterprise.
- 5 Marketing expenses (ME).
- 6 Enterprise nature (EN).

5 Analysis and results

5.1 *Descriptive statistical analysis and correlation analysis*

In Table 1, we report the descriptive statistics and correlations of the variables, including the means and standard deviations of the variables. The absolute values of correlation coefficients among variables are all smaller than the standard of 0.5. In the regression models, we computed variance inflation factors (VIFs), which ranged below the cutoff of 10. Thus, multicollinearity will not be a concern.

Table 1 Descriptive statistics and correlations analysis (N = 402)

Variable	Mean	Standard deviation	1	2	3	4	5	6	7	8	9	10	11
GW	0.96	0.24	1.000										
FIB	0.31	0.46	0.222***	1.000									
IIB	0.24	0.25	0.101**	0.108**	1.000								
GER	7.09	1.11	-0.020	0.160***	-0.172***	1.000							
PA	1.00	1.86	0.040	0.026	-0.149***	0.367***	1.000						
Age	15.89	8.52	-0.150***	-0.018	0.001	0.224***	0.144***	1.000					
Size	63.37	195.20	-0.009	0.041	0.006	-0.080	-0.067	0.261***	1.000				
GR	13.95	56.50	-0.020	-0.055	0.011	-0.042	0.018	0.157***	0.014	1.000			
ROA	7.12	6.30	-0.034	-0.028	0.048	0.034	0.097*	-0.136***	-0.163***	0.056	1.000		
ME	3.21	6.13	0.073	0.103**	0.118**	0.071	0.090*	0.003	-0.154***	-0.022	0.398***	1.000	
EN	0.70	0.46	-0.026	0.250***	0.140***	0.004	-0.066	-0.177***	0.091*	-0.098**	-0.058	-0.197***	1.000

5.2 Hierarchical regression analysis

We use hierarchical multiple regression model for analysis. Table 2 shows the results of regression analysis. Model 1-Model 3 carry out hierarchical regression with formal institutional benefits as the dependent variable. Greenwashing and all control variables are added to verify the main effect in model 1. The results show that greenwashing has a positive impact on the acquisition of formal institutional benefits ($b = 2.12$, $P < 0.05$). Tests of Model 2 and Model 3 indicate that government-enterprise relationship positively moderates the relationship between greenwashing and formal institutional benefits ($b = 1.27$, $P < 0.05$).

Table 2 Multiple groups of multiple regression results

	FIB			IIB		
	M1	M2	M3	M4	M5	M6
<i>Controls</i>						
AGE	0.015	-0.003	-0.003	0.007	0.013	0.013
Size	0.000	0.001	0.000	0.000	-0.000	-0.000
GR	-0.006	-0.008	-0.007	0.001	0.001	0.001
ROA	-0.186	-0.025	-0.016	0.003	0.009	0.010
ME	0.707	0.071	0.064	0.031	0.033	0.032
EN	1.750	1.719	1.634	0.578	0.585	0.571
<i>Explanatory variable</i>						
GW	2.117**	2.032**	2.032**	0.562*	0.648*	0.728**
GER		0.376**	0.340**			
PA					-1.941**	-0.230**
<i>Moderating effect</i>						
GW×GER			1.273**			
GW×PA						0.280+
_Cons	-4.49	-6.76	-6.48	-2.36	-2.41	-2.47
N	402	402	402	402	402	402
Adj. R ²	0.126	0.147	0.162	0.016	0.028	0.029

All coefficient estimates use the standard error to achieve robustness to heteroscedasticity, and *, ** and *** are significant at the levels of 10%, 5% and 1% respectively (two-tailed test).

Similarly, Model 4-Model 6 take informal institutional benefits as dependent variable. Greenwashing and all control variables are added in Model 4. The results show that greenwashing positively influences the informal institutional benefits of enterprises ($b = 0.56$, $P < 0.10$). Tests of Model 5 and Model 6 indicate a marginally significant moderating effect between greenwashing and informal institutional benefits ($b = 0.28$, $P < 0.10$).

To sum up, greenwashing has a significant positive impact on formal institutional benefits. Although the government has certain measurement standards when granting various subsidies, it is still relatively simple for enterprises to strive for environmental

protection subsidies and incentives through selective information disclosure under the background of imperfect supervision mechanism. Greenwashing also has a significant positive impact on the informal institutional benefits. Public evaluation, the main constitution of informal institutional benefits, is easily influenced by external environment. Due to information asymmetry, the public often lacks sufficient recognition ability. The symbolic image of 'green' and 'environmental protection' established by enterprises according to public concern will confuse the public, and usually get greater public recognition. Moreover, the government-enterprises relationship and public attention can positively promote enterprises to obtain institutional benefits. Closer relationship between government and enterprises can help obtain more government resources and information. Facing the limitation of information asymmetry, the higher level of public attention is more likely to be used by enterprises to obtain more social recognition through greenwashing.

6 Conclusion

Based on institutional theory, we divide institutional benefits into formal institutional benefits and informal institutional benefits, and examine the possibility of enterprises obtaining two kinds of benefits through greenwashing. From the perspective of Government-enterprise relationship and society-enterprises relationship, we also analyse the which factors affect the relationship between greenwashing and two institutional benefits, looking for the factors that can inhibit greenwashing.

Based on the panel data of Chinese enterprises from 2010 to 2015, the results show that greenwashing of enterprises has a positive impact on both formal institutional benefits and informal institutional benefits. Government-enterprise relationship will positively regulate the relationship between greenwashing and formal institutional benefits, and public attention will also enhance the positive relationship between greenwashing and informal institutional benefits.

7 Research contributions

The results of this study provide practical enlightenment for the management of Chinese enterprises. First, the government should enhance environmental supervision, establish a better environmental management mechanism, and lead enterprises to take substantial green measures instead of symbolic ones. Supervision departments should play the role of government supervision and strengthen the management of government subsidies. Through the establishment of a more perfect environmental policy and a more effective reward and punishment mechanism, the government can guide a better industry environment. Second, enterprises should follow policies, regulations and the public expectation to grasp the opportunity of transformation. Enterprises should actively adopt green substantive behaviour under the guidance of the government, avoid using green drift behaviour to obtain short-term benefits, but obtain long-term benefits through active green technology innovation. Under the increasingly perfect institutional environment, continuing to take greenwashing will only be severely punished and abandoned by the market. Third, under the background of correct guidance and sufficient information, the public can promote enterprises to carry out substantive green measures through higher

attention. Therefore, the government and relevant departments need to reduce the information barriers of public participation in supervision, so as to lead better public supervision. Similarly, public individuals should play their roles more reasonably and effectively under the condition of mastering more knowledge and information in order to avoid being used.

8 Research limitations and prospects

This study has several limitations. First, we select the unique ‘relationship’ variable in the context as the moderating variable and explore the influence. Other important variables can be added for further discussion in the future such as institutional quality. Second, this study distinguishes informal institutional benefits from informal institutional benefits. However, from the perspective of institutional theory, there are many forms of division, such as stakeholders, investors, media, and the public etc. Third, this paper focuses on the consequences and influencing factors of corporate greenwashing in China, and measures the role of different relationships in the institutional environment. With the continuous development, the relationship between enterprises and the external environment is constantly evolving. We can continue to deepen in a dynamic way in the future.

References

- Alkahtani, A., Nordin, N. and Khan, R.U. (2020) ‘Does government support enhance the relation between networking structure and sustainable competitive performance among SMEs?’, *Journal of Innovation and Entrepreneurship*, Vol. 9, No. 1, pp.1–16.
- Bae, S.M., Masud, M., Kaium, A. and Kim, J.D. (2018) ‘A cross-country investigation of corporate governance and corporate sustainability disclosure: a signaling theory perspective’, *Sustainability*, Vol. 10, No. 8, p.2611.
- Bondy, K., Matten, D. and Moon, J. (2008) ‘Multinational corporation codes of conduct: governance tools for corporate social responsibility?’, *Corporate Governance: An International Review*, Vol. 16, No. 4, pp.294–311.
- Bowen, F. and Aragon-Correa, J.A. (2014) ‘Greenwashing in corporate environmentalism research and practice: the importance of what we say and do’, *Organization and Environment*, Vol. 27, No. 2, pp.107–112.
- Chen, L. and Yang, W. (2019) ‘R & D tax credits and firm innovation: evidence from China’, *Technological Forecasting and Social Change*, Vol. 146, pp.233–241.
- Connelly, B.L., Certo, S.T., Ireland R.D. and Reutzel, C.R. (2011) ‘Signaling theory: a review and assessment’, *Journal of Management*, Vol. 37, No. 1, pp.39–67.
- Cormier, D. and Magnan, M. (2015) ‘The economic relevance of environmental disclosure and its impact on corporate legitimacy: an empirical investigation’, *Business Strategy and the Environment*, Vol. 24, No. 6, pp.431–450.
- Dasgupta, S., Wheeler, D. and Huq, M. (1997) *Bending the Rules: Discretionary Pollution Control in China*, Available at SSRN 620593.
- Davies, I.A., Haugh, H. and Chambers, L. (2019) ‘Barriers to social enterprise growth’, *Journal of Small Business Management*, Vol. 57, No. 4, pp.1616–1636.
- Delmas, M.A. and Burbano, V.C. (2011) ‘The drivers of greenwashing’, *California Management Review*, Vol. 54, No. 1, pp.64–87.

- Delmas, M.A. and Montes-Sancho, M.J. (2010) 'Voluntary agreements to improve environmental quality: symbolic and substantive cooperation', *Strategic Management Journal*, Vol. 31, No. 6, pp.575–601.
- DesJardine, M.R., Marti, E. and Durand R. (2021) 'Why activist hedge funds target socially responsible firms: the reaction costs of signaling corporate social responsibility', *Academy of Management Journal*, Vol. 64, No. 3, pp.851–872.
- Febi, W., Schäfer, D., Stephan, A. and Sun, C. (2018) 'The impact of liquidity risk on the yield spread of green bonds', *Finance Research Letters*, Vol. 27, pp.53–59.
- Fu, J. and Geng, Y. (2019) 'Public participation, regulatory compliance and green development in China based on provincial panel data', *Journal of Cleaner Production*, Vol. 230, pp.1344–1353.
- Gray, S.G., Sütterlin, B., Siegrist, M. and Árvai, J. (2020) 'The benefit of virtue signaling: corporate sleight-of-hand positively influences consumers' judgments about 'social license to operate', *Journal of Environmental Management*, Vol. 260, p.110047.
- Gregory, R.P. (2021) 'When is greenwashing an easy fix?', *Journal of Sustainable Finance and Investment*, pp.1–24.
- Gu, B., Chen, F. and Zhang, K. (2021) 'The policy effect of green finance in promoting industrial transformation and upgrading efficiency in China: analysis from the perspective of government regulation and public environmental demands', *Environmental Science and Pollution Research*, Vol. 28, No. 34, pp.47474–47491.
- Guerrero, M. and Urbano, D. (2020) 'Institutional conditions and social innovations in emerging economies: insights from Mexican enterprises' initiatives for protecting/preventing the effect of violent events', *The Journal of Technology Transfer*, Vol. 45, No. 4, pp.929–957.
- Hauska, L. (2019) *Sustainable Development Goals as a Guideline for Multinational Corporations*, Emerging market multinationals and Europe, Springer, Cham, pp.159–176.
- Hu, K. and Shi, D. (2021) 'The impact of government-enterprise collusion on environmental pollution in China', *Journal of Environmental Management*, Vol. 292, p.112744.
- Jahdi, K.S. and Acikdilli, G. (2009) 'Marketing communications and corporate social responsibility (CSR): marriage of convenience or shotgun wedding?', *Journal of Business Ethics*, Vol. 88, No. 1, pp.103–113.
- Kadriu, A., Krasniqi, B.A. and Boari, C. (2019) 'The impact of institutions on SMEs' innovation in transition economies', *International Journal of Entrepreneurship and Innovation Management*, Vol. 23, No. 4, pp.399–424.
- Kim, E.H. and Lyon, T.P. (2015) 'Greenwash vs. brownwash: exaggeration and undue modesty in corporate sustainability disclosure', *Organization Science*, Vol. 26, No. 3, pp.705–723.
- Kim, J., Fairclough, S. and Dibrell, C. (2017) 'Attention, action, and greenwash in family-influenced firms? evidence from polluting industries', *Organization and Environment*, Vol. 30, No. 4, pp.304–323.
- Korten, D.C. (1998) 'Do corporations rule the world? and does it matter?', *Organization and Environment*, Vol. 11, No. 4, pp.389–398.
- Kotsantonis, S., Pinney, C. and Serafeim, G. (2016) 'ESG integration in investment management: myths and realities', *Journal of Applied Corporate Finance*, Vol. 28, No. 2, pp.10–16.
- Leonidou, L.C., Kvasova, O., Leonidou, C.N. and Chari, S. (2013) 'Business unethicity as an impediment to consumer trust: the moderating role of demographic and cultural characteristics', *Journal of Business Ethics*, Vol. 112, No. 3, pp.397–415.
- Li, H. and Atuahene-Gima, K. (2001) 'Product innovation strategy and the performance of new technology ventures in China', *Academy of Management Journal*, Vol. 44, No. 6, pp.1123–1134.
- Li, Z. (2022) 'Government-enterprise relation, financing plight and enterprise growth: empirical evidence from world bank on Chinese firms', *Amfiteatru Economic*, Vol. 24, No. 59, pp.214–235.

- Lin, H., Zeng, S.X., Ma, H.Y. and Chen, H.Q. (2015) 'How political connections affect corporate environmental performance: the mediating role of green subsidies', *Human and Ecological Risk Assessment: An International Journal*, Vol. 21, No. 8, pp.2192–2212.
- Lin, Y.H., Lin, F.J. and Wang, K.H. (2021) 'The effect of social mission on service quality and brand image', *Journal of Business Research*, Vol. 132, pp.744–752.
- Long, W., Li, S., Wu, H. and Song, X. (2020) 'Corporate social responsibility and financial performance: the roles of government intervention and market competition', *Corporate Social Responsibility and Environmental Management*, Vol. 27, No. 2, pp.525–541.
- Lyon, T.P. and Montgomery, A.W. (2015) 'The means and end of greenwash', *Organization and Environment*, Vol. 28, No. 2, pp.223–249.
- Marquis, C. and Toffel, M.W. (2012) *When Do Firms Greenwash?: Corporate Visibility, Civil Society Scrutiny, and Environmental Disclosure*, Harvard Business School, Boston, MA, pp.11–115.
- Morgeson, F.P., Aguinis, H., Waldman, D.A. and Siegel, D.S. (2013) 'Extending corporate social responsibility research to the human resource management and organizational behavior domains: a look to the future', *Personnel Psychology*, Vol. 66, No. 4, pp.805–824.
- North, D.C. (1991) 'Institutions', *Journal of Economic Perspectives*, Vol. 5, No. 1, pp.97–112.
- Parguel, B., Benoît-Moreau, F. and Larceneux, F. (2011) 'How sustainability ratings might deter', 'greenwashing': a closer look at ethical corporate communication', *Journal of Business Ethics*, Vol. 102, No. 1, pp.15–28.
- Peng, M.W. (2003) 'Institutional transitions and strategic choices', *Academy of Management Review*, Vol. 28, No. 2, pp.275–296.
- Pimonenko, T., Bilan, Y., Horák, J., Starchenko, L. and Gajda, W. (2020) 'Green brand of companies and greenwashing under sustainable development goals', *Sustainability*, Vol. 12, No. 4, p.1679.
- Roulet, T.J. and Touboul, S. (2015) 'The intentions with which the road is paved: attitudes to liberalism as determinants of greenwashing', *Journal of Business Ethics*, Vol. 128, No. 2, pp.305–320.
- Scott, W.R. (2012) 'Embedding the examination of multilevel factors in an organization field context', *Journal of the National Cancer Institute Monographs*, Vol. 2012, No. 44, pp.32–33.
- Shu, C., Zhou, K.Z., Xiao, Y. and Gao, S. (2016) 'How green management influences product innovation in China: the role of institutional benefits', *Journal of Business Ethics*, Vol. 133, No. 3, pp.471–485.
- Suchman, M.C. (1995) 'Managing legitimacy: strategic and institutional approaches', *Academy of Management Review*, Vol. 20, No. 3, pp.571–610.
- Tian, Y., Wang, Y., Xie, X., Jiao, J. and Jiao, H. (2019) 'The impact of business-government relations on firms' innovation: Evidence from Chinese manufacturing industry', *Technological Forecasting and Social Change*, Vol. 143, pp.1–8.
- Walker, K. and Wan, F. (2012) 'The harm of symbolic actions and green-washing: corporate actions and communications on environmental performance and their financial implications', *Journal of Business Ethics*, Vol. 109, No. 2, pp.227–242.
- Weaver, G.R., Trevino, L.K. and Cochran, P.L. (1999) 'Integrated and decoupled corporate social performance: management commitments, external pressures, and corporate ethics practices', *Academy of Management Journal*, Vol. 42, No. 5, pp.539–552.
- Wu, M.W. and Shen, C.H. (2013) 'Corporate social responsibility in the banking industry: motives and financial performance', *Journal of Banking and Finance*, Vol. 37, No. 9, pp.3529–3547.
- Xiao, S.S., Jeong, I., Moon, J.J., Chung, C.C. and Chung, J. (2013) 'Internationalization and performance of firms in China: moderating effects of governance structure and the degree of centralized control', *Journal of International Management*, Vol. 19, No. 2, pp.118–137.

- Xu, Y., Li, S., Zhou, X., Shahzad, U. and Zhao, X. (2022) 'How environmental regulations affect the development of green finance: recent evidence from polluting firms in China', *Renewable Energy*, Vol. 189, pp.917–926.
- Yang, X., Liao, S. and Li, R. (2021) 'The evolution of new ventures' behavioral strategies and the role played by governments in the green entrepreneurship context: an evolutionary game theory perspective', *Environmental Science and Pollution Research*, Vol. 28, No. 24, pp.31479–31496.
- Yi, Y., Wang, Y. and Shu, C. (2020) 'Business model innovations in China: a focus on value propositions', *Business Horizons*, Vol. 63, No. 6, pp.787–799.
- Yoffie, D.B. (1987) 'Corporate strategies for political action: a rational model', *Business Strategy and Public Policy*, Vol. 43, 60.
- Zhang, K., Pan, Z., Janardhanan, M. and Patel, I. (2022) 'Relationship analysis between greenwashing and environmental performance', *Environment, Development and Sustainability*, pp.1–31.