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The Influence of Legitimacy on a Proactive Green Orientation and Green Performance: A Study Based on Transitional Economy Scenarios in China

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Abstract: With environmental pollution, climate change and resource scarcity being serious global issues, green entrepreneurship is increasingly seen as an approach to simultaneously address economic performance, environmental impact and social responsibility. As green entrepreneurship needs to consider both venture performance and social responsibility, it will be subject to legitimacy constraints at the system level. Whether these legitimacy constraints are favorable to green enterprise is not yet clear from current research. Especially for transition economies, the problem of whether proactive green enterprises facing legitimacy constraints under institutional uncertainty can achieve green performance requires further study. Thus, a theoretical model to determine the relationship between green proactiveness orientation (GPO), green performance, legitimacy, and transitional economics was proposed. Based on the data from 235 new Chinese green firms, the empirical results suggest that green startups launch with a green proactiveness orientation, which enables them to acquire a green performance advantage over their competitors. Improvements in green performance is also shown to be driven by the pressure from institutional legitimacy. Better green performance can be easily achieved if green startups have a higher level of legitimacy. However, against the background of transitional economies, the increase in institutional uncertainty will damage the promotion of political legitimacy and make the enterprises that are subject to political legitimacy constraints lose their green performance. Currently, political legitimacy is no longer an impetus. However, the increase in institutional uncertainty will strengthen the promotion of commercial legitimacy and cause green-oriented startups to pursue more commercial interests. Thus, to a certain extent, it will lead to market uncertainty. The conclusion of this study not only provides guidance for startups in different industries to develop green actions under the pressure of institutional constraints but also warns governments to improve policies and regulations quickly under different situations of institutional uncertainty.

Keywords: green proactiveness orientation; legitimacy; transitional economy; institutional uncertainty; green performance

1. Introduction

With the immensity of global environmental challenges and the worsening energy crisis, balancing economic development and environmental protection represents a substantial problem for governments, academia and industry around the world. Multiple incidents, including the British Petroleum oil spill in the Gulf of Mexico and surging PM (Particulate Matter) 2.5 levels

in China, have caused governments and businesses to realize the urgency and necessity of a green transformation. An important component of addressing sustainable development issues and environmental degradation will hinge on making up for and improving the lack of social responsibility of corporations [1,2]. There is an increasing call for enterprises to develop green businesses and adopt a development mode that considers both ecological and economic benefits, that is, green entrepreneurship, which is recognized by governments, enterprises, customers and other stakeholders. Green entrepreneurship integrates business entrepreneurship and sustainable development, simultaneously considering the sustainable development of the environment, economy and society [3,4]. Thus, both business and academia are concerned about whether enterprises with proactive green orientation can truly achieve green performance and how legitimacy constraints influence green startups in achieving green performance.

Green entrepreneurship refers to entrepreneurial behavior in an enterprise's green innovation of products, services and market development to generate profit while considering environmental protection [5,6]. Green entrepreneurship theory developed with the gradual integration of the theories of entrepreneurship and social enterprises. Under the double influence of eco-orientation and market-orientation, enterprises are not likely to be burdened by green entrepreneurship as it will provide vast resources for enterprise development [7,8]. With reference to the definition of entrepreneurial orientation by Miller and Friesen (1983) [9], this study argues that green entrepreneurial companies need to have green entrepreneurial orientation (GEO), which includes green innovation, green risk taking and green proactiveness. Because green entrepreneurial companies need to be socially responsible, it is particularly important for them to acquire legitimacy. Suchman (1995) [10] proposes that legitimacy refers to external stakeholders' overall evaluation of the appropriateness of corporate behavior with respect to both social responsibility and other standards, such as competitive advantage and enterprise scale. Breaking through legitimacy constraints and achieving green performance has become the main goal of enterprises involved in green entrepreneurship.

Because proactive green-oriented businesses not only focus on business performance but also must consider social responsibility, the relationship between GEO and green performance will be subject to the restrictions and limitations of the institutional environment. As an institutionally embedded binding mechanism, the study of enterprise legitimacy has attracted attention [11]. Nevertheless, this research area encompasses two views. The first view takes strategic theory as a starting point and treats legitimacy as a strategic resource that enterprises are prone to lose, claiming that the ultimate goal in seeking legitimacy is to obtain resources that can be mobilized and that securing recognition and legitimacy from external stakeholders will be conducive to start-ups' ability to realize opportunity and value; this "legitimacy–resources–business growth" model of causal relationships is widely recognized [12–14]. However, many scholars have questioned it and propose that legitimacy cannot be considered a key resource for startups in overcoming the disadvantage of starting anew because experienced, reasonable entrepreneurs are more likely to pursue more easily obtained resources to build their business models [12,15,16]. Combining the above arguments, this study tends towards the latter view and argues that legitimacy should exist as an institutionally embedded limiting mechanism and that green-oriented entrepreneurship should not deem legitimacy as a necessary resource but, instead, take appropriate strategic action according to the circumstances.

Based on this analysis, this study focuses on two points. First, because the causal model of "GEO–legitimacy–resources–business growth" does not reflect the essence of legitimacy in green entrepreneurship; a comparative exploration of the impact of varying degrees of legitimacy on the effects between GEO and green performance appears to be more worthwhile, and such studies are rare. Therefore, we have explored the relationship between green proactiveness orientation (GPO) and green performance and described the moderating effect of legitimacy. More importantly, the premise upon which it is possible to integrate the theory of legitimacy and green entrepreneurship theory is the existence of stable and effective systemic rules on which legitimacy evaluations rely; this does not match many transitional economies, including China. Because of the substantial institutional uncertainty

created by economies in transition, previous research conclusions have become inapplicable, producing higher heterogeneity in guidelines that judge legitimacy in transition economies [17]. Thus, in light of the situation of China's transition economy, we explore the relationship between GPO, legitimacy and green performance under institutional uncertainty.

To accomplish the above objectives, 235 valid samples are collected and empirical tests performed. The results show that GPO has a positive impact on green performance and that the degree of political and commercial legitimacy has a positive moderating effect. However, institutional uncertainty undermines the promotional effect of political legitimacy between GPO and green performance while enhancing the promotional effect of commercial legitimacy between them. The structure of the paper is as follows. An extensive review of green entrepreneurship theory based on entrepreneurial orientation, legitimacy and transitional economy theory is addressed in Section 2 with relevant hypotheses. The method of sample analysis, data gathering and empirical results are discussed in Section 3. Section 4 provides theoretical and managerial implications. The conclusion and research limitation are presented in the final section.

2. Theoretical Background and Hypotheses

2.1. Green Entrepreneurship and Green Entrepreneurial Orientation

Green entrepreneurship (GE), also known as environmental, ecological or sustainable entrepreneurship, primarily represents the process of identifying, evaluating and taking advantage of economic opportunities that arise during market failure and facilitating the sustainable development of such enterprises [18,19]. The core of GE is to discover the next market opportunity to develop a green market through innovation while committing to corporate social and ecological responsibility [5,20]. Because of GE's longer payback period coupled with its social responsibilities, GE often requires policies that encourage, support and are widely recognized by society; the enterprises also play a dual role in ecological construction and entrepreneurship [21]. In addition, enterprises dedicated to GE must proactively achieve the twin objectives of marketing and environmentalism, making both green participation orientation and entrepreneurial orientation important [22,23]. Therefore, in the study of GE, enterprises' GEO and recognition of their legitimacy under the institutional theory are determining factors in the success of GE enterprises.

GEO came from the concept of entrepreneurial orientation (EO). The proposition of EO is primarily to reflect the unique characteristics of and differences between entrepreneurial enterprises and other conservative enterprises, that is, innovation, risk taking and proactiveness [9,24,25]. This not only explained entrepreneurial enterprises' unique entrepreneurial strategic position [26] but also represented the inherent entrepreneurial orientation of entrepreneurial enterprises [27]. EO indicated the overall competitive orientation and tendency of organizational behavior in entrepreneurial enterprises and applied them to GE [28]. GEO reflected not only the market competition orientation of GE enterprises but also their green participation orientation [29]. GEO includes green innovation, green risk-taking and green proactiveness, representing the tendency of GE enterprises to realize green technological innovation to keep ahead of the competition, the tendency to make risky investment decisions in the face of uncertainty, and the tendency to lead the industry through advance actions, respectively. GEO as proposed in this paper is a concept at the organizational level.

Although there have been many studies of EO and entrepreneurial performance, their results vary widely. Some scholars believe that EO helps enhance entrepreneurial performance: this effect is particularly pronounced in the initial start-up phase and growth phase [30,31]. Others believe that EO could have a negative impact or no impact on entrepreneurial performance [32]. The difference between EO and entrepreneurial performance stems from the entrepreneurial activity itself, which is dynamic and highly uncertain [33,34]. Whether enterprise performance is enhanced depends largely on specific entrepreneurial behaviors under different scenarios [35,36]. Nevertheless, there have been few studies of whether enterprises with high GEO can obtain high green performance. At the same

time, compared to financial performance, green performance is only reflected in product energy consumption, environmental protection and customer safety, among others. In comparison, therefore, the relationship between EO and green performance should vary.

2.2. Green Proactiveness Orientation and Green Performance

Green proactiveness orientation (GPO), as an important dimension of GEO, represents the tendency of enterprises to be more proactive in adopting GE behaviors compared to their competitors [9]. Green proactiveness-oriented enterprises tend to be industry leaders, examining industry trends, seizing opportunities in advance, and taking early action to cope with change [37]. GPO is a combination of initiative and behavior orientation, representing the proactiveness of enterprises to act on the environment rather than to passively accept. It reflects a forward-looking tendency in entrepreneurial enterprises, including accurately predicting industry trends, avoiding production of low green-potential products, leading customer acceptance of green products and consumption patterns, etc. [5]. Therefore, taking green actions before competitors do so, including launching new green products, new service models, new green management modes and green technologies, along with having the foresight to examine changes in the development of the industry, can reflect the meaning and nature of GPO [38,39].

Green performance represents a reduction of an enterprise's negative impact on the environment while achieving a balance of business and environment interests [40,41]. Therefore, green performance measures an enterprise in which business and environmental needs interact [42,43]. Achieving green performance requires enterprises not only to reduce pollution, waste and energy consumption, and improve customer safety [44,45] but also to survive and develop. Green performance includes multiple measurement indicators, each representing a variable, in accordance with a reduced negative impact on the environment [40]. These variables include reduced use of water, energy, non-renewable resources, toxic inputs, solid waste, soil contamination, wastewater emissions, emissions into the air, noise, smell/odor emissions, landscape damage, and risk of severe accidents.

Many studies have centered on the relationship between proactiveness orientation and entrepreneurial performance. The main objective of proactiveness-oriented startups is to obtain proactive advantages and a demand premium [38,46,47]. Advantages include a deep and lasting impression on customers, strong brand recognition and the high cost of customers turning to other enterprises. At the same time, early entrants in the industry also obtain a low-cost advantage from having a lead in the technology and downshifting the learning curve [48,49]. Proactive-oriented enterprises can achieve significant performance advantages. Similarly, GPO inherits the essential characteristics of proactiveness orientation, reflected in taking GE action before the competition. Choosing advance actions with green orientation as the purpose will achieve a green proactive advantage and a lead in green performance. There is a lack of research on the relationship between GEO and green performance, which this study aims to contribute to by proposing the following five hypotheses.

Hypothesis 1. *Enterprises with higher levels of GPO will have more improved green performance.*

2.3. Legitimacy

There are several scholars who have defined legitimacy [50–52]. Suchman (1995) [10] conducted a comprehensive review of his predecessors' work and proposed a concept of legitimacy that is widely recognized in academia: legitimacy is the generalized perception or assumption that the actions of an entity are appropriate, desirable or proper within some socially constructed system of norms, values, beliefs, and definitions. Startups are subject to the constraints of legitimacy, including the constraints of sociopolitical legitimacy and cognitive legitimacy [53]. Sociopolitical legitimacy refers to the degree of acceptance of a startup corporation's behavior and products by key stakeholders, the public and government officials; low social legitimacy will lead to registration difficulties, rejection

of product standards by the public, financing difficulties, etc. [54]. Cognitive legitimacy refers to the degree of social recognition and acceptance of startups, which is primarily determined by the extent of knowledge of new enterprises and their products and services by society. Low cognitive performance is reflected either in a low level of society-wide knowledge of or difficulty in accepting products or services by the startup or in a low customer opinion of said products and services [16,55].

Cognitive legitimacy belongs to the category of external legitimacy that can be acquired by enterprises. External legitimacy comes from outside an organization, including the support of customers, suppliers and partners for startups and the evaluations of startups by the government, regulators and the public media. Existing studies mostly address legitimacy from an external perspective [56,57]. On this basis, this study measures external legitimacy from two aspects: political legitimacy (government and regulatory agencies) and commercial legitimacy (suppliers, customers and partners).

In entrepreneurship, it is common to observe the integration of legitimacy and opportunities. To realize the business value of opportunities; experienced entrepreneurs tend to value commercial legitimacy greatly, deeming low commercial legitimacy a key factor that results in a difficult realization of the value of opportunities. This issue causes more experienced entrepreneurs to pay more attention to commercial legitimacy because a higher level of legitimacy assures a more intense spirit of innovation, and the more likely it is that an enterprise will gain a competitive advantage [58–60]. Especially, commercial legitimacy would be essential for green behavior to be of practical interest, as was proposed originally by the win-win strategy, and has not been shown empirically for various profit criteria [61–63]. Moreover, in green research, the value of GE is more difficult to realize than the value of ordinary entrepreneurship opportunities because green start-ups are confronted by the double constraint of sociopolitical legitimacy and commercial legitimacy [64]. Especially for experienced entrepreneurs, continuous learning makes them less optimistic and more concerned about the realization of green opportunities [29,65]. Therefore, when an enterprise embarks on green entrepreneurship ahead of its competitors, entrepreneurs should carefully consider their degree of acceptance by external stakeholders because the degree of political and commercial legitimacy affects the realization of green opportunity value and green performance to a large extent. For green entrepreneurs, the pressure of legitimacy will push enterprises to more actively engage in GE because stakeholders rely on various criteria and specifications to determine the legitimacy of GE. As the level of an enterprise's perceived political and commercial legitimacy goes higher, it receives more attention and is required more transparent information by the external stakeholders. Thus, enterprises with higher political and commercial legitimacy experience greater pressure to increase their green performance, which subsequently helps proactive green enterprises achieve green performance. This leads to Hypotheses 2 and 3 below.

Hypothesis 2. *The positive relationship between GPO and green performance is stronger in enterprises with higher levels of political legitimacy than in enterprises with lower levels of political legitimacy.*

Hypothesis 3. *The positive relationship between GPO and green performance is stronger in enterprises with higher levels of commercial legitimacy than in enterprises with lower levels of commercial legitimacy.*

2.4. Institutional Uncertainty in a Transitional Economy

“Transitional economy” refers to the transitional phase from a planned economy to a market economy. Unlike developed Western countries, many developing countries have coexisting planned and market economies, government intervention and market mechanisms, and traditional and modern economic development modes [66–68]. In the context of economic transition, start-ups also have features of ambidexterity, such as constantly swinging between and balancing commerce and environmental protection, specialization and diversification, entrepreneurship and maintaining the status quo [69,70]. A transition economy causes enterprises in developing countries, including

China, to exhibit unique characteristics in their choice of entrepreneurial behavior. As such, mature Western theories are inapplicable to transitional economies. There is no doubt that a systematic study of entrepreneurship behavior and GE behavior in transitional economies will provide a significant theoretical contribution to entrepreneurial management and green management, and more importantly, practical guidance for emerging from economic crises.

Institutional uncertainty is an important feature of transition economies [71]. It is a broad concept, encompassing very different forms of uncertainties in the political environment [72]. Because it is difficult to measure such uncertainties, limited proxies can be used in systematic cross-country investigations [73,74]. As seen from an analysis of existing empirical results, various scholars have used different units of measure, including governmental instability, political violence and policy uncertainty [75–77]. Although China has the unique advantages of governmental stability and relatively few political conflicts, policy instability is a serious disadvantage caused by the transitional economy. Such disadvantages, including policy gaps, still exist in some areas. For instance, the government lacks clearly defined terms of reference in key issues in the policy implementation process and many policies lack detailed observations and recommendations [78,79]. Because of lack of innovation, stability and effectiveness in some policies, it is difficult to translate them into effective entrepreneurial behavior. Thus, policy uncertainty to some extent represents the institutional uncertainty in China's transitional economy status and is the main indicator of measure that this study uses.

Therefore, transitional economy has a substantial impact on green entrepreneurial businesses. As institutional transition breaks the shackles of a planned economy, the addition of a private economy strongly stimulates market competition and vitality. In fierce competition, enterprises tend to pursue short-term performance goals instead of long-term ones, and enterprise behavior tends to relate to business performance instead of environmental performance [80]. When institutional uncertainty is high, policy restrictions for enterprises become less stringent, and enterprises will continue to look for and exploit loopholes and gaps in policies [67]. Especially when industry standards are unclear, institutional pressure on green enterprises decreases together with the drive to gain political legitimacy, leading to impaired green performance (H4). However, in the study of institution theory, formal and informal institutions exhibit a mutual substitution effect in the process of guiding economic behavior. When formal institutions are imperfect, informal norms and values will play a stronger role [81]. Therefore, when institutional uncertainty is high, it becomes more important for enterprises to gain recognition from the public, suppliers and partners [82]. In this situation, influences from informal institutions are more significant and the promotional effect of commercial legitimacy between GPO and green performance becomes more apparent (H5). This leads to Hypotheses 4 and 5. Figure 1 presents the overall research framework.

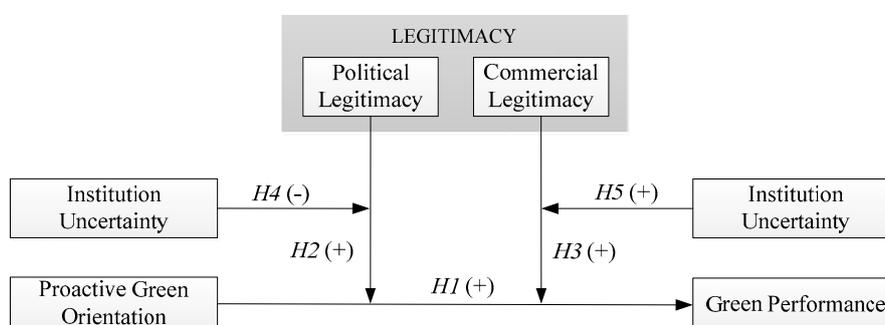


Figure 1. The research model.

Hypothesis 4. *The moderating effect of political legitimacy on the relationship between GPO and green performance becomes more negative as institutional uncertainty increases such that the three-way interaction of GPO, political legitimacy, and institutional uncertainty is negatively related to green performance.*

Hypothesis 5. *The moderating effect of commercial legitimacy on the relationship between GPO and green performance becomes more positive as institutional uncertainty increases such that the three-way interaction of GPO, commercial legitimacy, and institutional uncertainty is positively related to green performance.*

3. Methodology

3.1. Development of Survey Instrument

According to Murphy et al. (1996) [83], appropriate control variables should be used in studying entrepreneurial performance to avoid performance measurement bias. Therefore, this study used enterprise size, establishment time, sector, business scale and stage of development as control variables.

Based on the extensive theoretical background in the previous section, this study identified the following required measurements. All items were measured on a Likert five scale, where a rating of one indicates that the statement did not fit the reality of the enterprise to which the respondent belongs and a rating of five indicated a high fit. Moreover, the measures of EO has been mentioned in a previous study. This study adopts the scale from Covin and Slevin (1989) [26] on proactiveness orientation and used three statements to measure GPO. Table 1 presents the specific statements and factor loadings of GPO.

Table 1. Rotated Factor Matrix for Factor Analysis of GPO.

Factors		Cronbach's Alpha
1. We usually spearhead green initiatives to which peers followed or reacted.	0.848	0.806
2. We tend to be the industry "leader", often launching new green products, new technologies or green management before peers.	0.855	
3. Corporate executives frequently look at future industry trends, understand green development opportunities and take early action to manage change.	0.842	

Extraction Method: Principal Component Analysis. One component extracted.

Political legitimacy and commercial legitimacy belong to enterprises' external legitimacy, including the recognition of enterprises by governments, regulators, customers, suppliers and partners. Four statements were selected from the discussion of legitimacy in Suchman (1995) [10] and Rottig and Reus (2009) [58] to measure political legitimacy and commercial legitimacy. Tables 2 and 3 present these statements and corresponding loading factors, showing a high significance affirmative of the statements.

Table 2. Rotated Factor Matrix for Factor Analysis of Political Legitimacy.

Factors		Cronbach's Alpha
1. The enterprise was highly praised by government departments.	0.855	0.884
2. The enterprise was recognized by regulatory bodies.	0.873	
3. The government frequently recommended us as a model enterprise.	0.874	
4. The government regularly visited our enterprise.	0.842	

Extraction Method: Principal Component Analysis. One component extracted.

Institutional uncertainty and market uncertainty are the primary features of transitional economies. Puffer et al. (2010) [78] and Sheng et al. (2011) [79] have conducted thorough research on institutional uncertainty from the aspects of policy completeness and operability. Based on their

results, five questions were selected to measure institutional uncertainty (Table 4). In addition, Zhu and Sarkis (2004) [44] and Yang et al. (2013) [45] proposed four items to evaluate green performance, which consists of six questions expressed in Table 5.

Table 3. Rotated Factor Matrix for Factor Analysis of Commercial Legitimacy.

Factors		Cronbach's Alpha
1. The enterprise is widely recognized by customers.	0.847	0.864
2. The enterprise is widely recognized by suppliers.	0.824	
3. The enterprise's products have been highly evaluated by peers.	0.882	
4. The enterprise's products have been highly evaluated by customers.	0.831	

Extraction Method: Principal Component Analysis. One component extracted.

Table 4. Rotated Factor Matrix for Factor Analysis of Institutional Uncertainty.

Factors		Cronbach's Alpha
1. Key policies related to business operation are not comprehensive.	0.786	0.854
2. Relevant industry standards are not clear.	0.766	
3. Relevant industry policies are fuzzy.	0.821	
4. There are gaps in related institutions and policies.	0.832	
5. Relevant policies lack specific guidance and operational advice for implementation.	0.776	

Extraction Method: Principal Component Analysis. One component extracted.

Table 5. Rotated Factor Matrix for Factor Analysis of Green Performance.

Factors		Cronbach's Alpha
1. Compared to peers, we cause less air pollution.	0.820	0.897
2. Compared to peers, we release less sewage.	0.797	
3. Compared to peers, we show a high significance affirmative of the statements.	0.823	
4. Compared to peers, our cost of handling poisonous, harmful and hazardous materials is lower.	0.724	
5. Compared to peers, our cost of energy consumption is lower.	0.865	
6. Compared to peers, we have a lower rate of environmental accidents.	0.849	

Extraction Method: Principal Component Analysis. One component extracted.

3.2. Data Gathering

To test the proposed hypothesis, this study conducted a questionnaire survey. According to Li and Atuahene-Gima's (2001) [84] definition of start-ups as enterprises that have been established for no more than eight years, our sample focused on data from start-ups within the last eight years. The survey distribution lasted from February through July 2016. The survey was conducted from February through July 2016, and the study areas are Beijing, Shanghai, Changchun, Shenyang, Hangzhou and Xiamen. These areas have different levels of development (i.e., central developed cities, economically less active cities from the North and coastal cities from the South) to avoid the effects of different levels of regional economic development. Enterprises involved in the research include green construction and materials, green furnishing, green process transformation, low-carbon energy sources, eco-friendly materials, energy-saving equipment, and waste disposal services and training.

The data collection process was divided into three phases. In the first phase, survey questionnaires were distributed through email and 120 responses were gathered. In the second phase, questionnaires

were given to MBA students, 110 of whom responded. In the third phase, questionnaires were obtained onsite from mid-level and senior managers of solicited enterprises and from researchers completing the questionnaire face to face, with 63 responses collected. Overall, 297 responses were collected, 62 of which were excluded because of insufficient or incomplete responses. A total of 235 samples were valid and used in the study of 22 variables, making the combination valid based on the requirements stated by Bentler and Chou (1987) that the number of samples must be at least ten times the number of observed variables [85]. An ANOVA-Test was also conducted on the dependent variable (green performance) of three different groups and no significant difference was found ($t = 0.145 > 0.05$), thus, they can be used in combination.

3.3. General Descriptive Analysis

After the large sample was collected, descriptive statistical analysis was carried out. On the one hand, the results of a general descriptive analysis could reflect the basic characteristics of the sampled enterprises. On the other hand, these results could also confirm the versatility and reproducibility of other findings. The results of a general descriptive analysis would help the study by providing salient features of samples, thereby supplementing the assessment of the research objects.

3.4. Examination of Validity

The study measured both content validity and construct validity. Content validity indicates whether the content of the scale can accurately cover the range or extent of the concept or meaning to be measured, and this can usually be measured subjectively [86]. Construct validity includes both convergent validity and discriminant validity. Convergent validity can be illustrated by composite reliability (hereinafter referred to as CR) and average variance extracted from latent variables (hereinafter referred to as AVE). For discriminant validity, this study referenced Fornell and Larcker (1981) [87] and carried out tests by comparing the average root mean square values of AVE from various latent variables and the correlation coefficients of these variables.

3.5. Examination of Reliability

The reliability test refers to the level of consistency of measurements by different measurers taken with the same tools, reflecting the degree of approximation of repeated measurements under the same conditions, that is, whether a set of projects measure the same concept. Generally, this test can be carried out by inspecting the internal consistency of the measurement tools [88]. In the Likert-scale method, the most commonly used method is the L.J. Cronbach α coefficient. Although an α coefficient value of 0.70 is on the lower boundary of the scale, it is still acceptable.

3.6. Correlation Analysis

Correlation analysis focuses on the correlation among independent variables, control variables and dependent variables. The correlation coefficient is the commonly used measurement and the method can be the Pearson's product moment correlation method and the two-sided test. If the correlation coefficient between independent variables is greater than 0.75, the variables are considered too similar and collinearity might be present.

Harman's single-factor test was used to analyze the entire questionnaire. In the absence of rotation, the explained variance of the first factor extracted exceeded 50%. Thus, it could be determined that there was a serious bias in the common measurement method.

3.7. Regression Analysis

In this study, regression analysis was used to verify the relationship between GPO and startup performance and the moderating effect of legitimacy and institutional uncertainty. The study used three indicators for regression analysis. First, the coefficient of determination of the model reflects

the explanatory power of the regression equation for the dependent variable. We used R² to reflect the fit of the regression equation to avoid an influence from the number of independent variables on R². Second, the significance level of F. The regression model is said to be valid when the regression coefficient is not 0 at significance value of less than 0.05 or 0.01. Third, the variance inflation factor (VIF index) reflects the collinearity between independent variables. Collinearity is indicated by a large VIF index. When $0 < VIF < 10$, multicollinearity generally does not exist.

4. Empirical Results

4.1. Results of General Descriptive Analysis

Table 6 presents the characteristics of the samples collected. In summary, the enterprises were mostly of small and medium scale; the number of years that enterprises were established clustered around 3 to 8 years; the sector distribution was relatively dispersed; the proportion of firms with turnover under 5 million yuan was nearly 70%; enterprise ownership was primarily foreign funded; and domestic ownership was privately funded. On the premise of involving green businesses, the samples satisfied the requirement of diversity and the overall descriptive statistics reflected the basic characteristics of the objects under investigation, laying the foundation for further analysis.

Table 6. Characteristics of survey samples.

Enterprise Size		Sectors			
1–50 people	17.9		Real estate		18.5
50–100 people	43.4		Agriculture, forestry and livestock		3.0
100–300 people	17.4		Energy, environmental protection		20.2
300–500 people	20.0		Environmental transformation and training		3.8
More than 500 people	1.3		Materials		14.5
			Accommodation, catering		3.8
			Manufacturing		28.5
			Construction		7.7
Business Size		Ownership		Year Established	
1 million or less	34.0	State-owned	11.5	1 year or less	7.6
1 million 3 million	19.6	Foreign investment	40.4	1–3 years	26.8
3 million to 5 million	15.3	Private	31.1	3–5 years	24.7
5 million to 10 million	18.5	Joint venture	17.0	5–8 years	40.9
10 million to 30 million	11.5				
More than 30 million	1.1				

Note: numbers present in percentage (%).

4.2. Results of Validity Examination

To verify content validity, we conducted a literature review. Two expert representatives each from the academe, business and government sectors were also invited to examine the research questions and determine whether they were scientific and reasonable. In accordance with recommendations from the expert panel, we adjusted some items to enhance the clarity, technicality and soundness of the survey instrument. The questionnaire designed by this study was in line with scientific and rational requirements, that is, it met the requirements of content validity.

The questionnaire passed the requirements of the convergent validity test, factor analysis and discriminant validity test. Average values obtained in the convergent validity test for all five factors were greater than 0.5 (Tables 1–5), which satisfies research requirements. The load factors obtained in the factor analysis are all greater than 0.5 and the proportion of the cumulative of variance explained is greater than 50% (Tables 1–5), successfully meeting the research requirements. The discriminant validity test result indicated good discriminant validity between variables. As shown in Table 7, the diagonal values represent the square root of AVE which is greater than the coefficients in the corresponding row and column.

Table 7. Descriptive Statistics and Correlation Matrix.

Variable	Mean	Std. Deviation	Enterprise Size	Year Established	Sector	Business Size	Ownership	Green Performance	GPO	Political Legitimacy	Commercial Legitimacy	Institutional Uncertainty
Enterprise size	3.03	1.417	N/A									
Year established	2.99	0.993	0.544 **	N/A								
Sector	6.66	3.325	−0.375 **	−0.194 **	N/A							
Business size	2.86	1.912	0.683 **	0.568 **	−0.295 **	N/A						
Ownership	2.54	0.907	0.292 **	0.539 **	−0.067	0.306 **	N/A					
Green Performance	3.1887	0.96600	−0.038	−0.090	−0.039	0.014	−0.203 **	0.773				
GPO	3.1319	1.10042	0.041	−0.143 *	−0.085	0.091	−0.153 *	0.424 **	0.758			
Political Legitimacy	2.538298	1.0035308	0.055	0.034	−0.009	0.020	0.185 **	−0.171 **	−0.305 **	0.81		
Commercial Legitimacy	2.520213	0.9492271	0.090	0.094	0.029	0.050	0.164 *	−0.112	−0.327 **	0.587 **	0.789	
Institutional uncertainty	3.934468	0.8377595	−0.043	−0.056	−0.086	−0.043	−0.173 **	0.140 *	0.255 **	−0.224 **	−0.212 **	0.737

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed); $N = 235$, N/A indicates analysis not applicable; the diagonal line lists root square values of average.

4.3. Results of Reliability Examination

The measured Cronbach's alpha coefficients are as follows: the GPO Cronbach's alpha is 0.806, the political legitimacy Cronbach's alpha is 0.884, the commercial legitimacy Cronbach's alpha is 0.864, and the institutional uncertainty Cronbach's alpha is 0.854. The alpha coefficient values are between 0.80 and 0.90, indicating a good confidence level in the measured indicators.

4.4. Results of Correlation Analysis

Table 7 presents the descriptive statistical indicators and correlation analysis. Under a significance level of 0.01, the four main variables under study—Green Performance, GPO, Political Legitimacy and Commercial Legitimacy—are significantly correlated with institutional uncertainty. The three major research constructs of GPO, Political Legitimacy and Institutional Uncertainty show significant correlation. Among the control variables, business size and number of years established and other research constructs have a general correlation.

Correlation analysis showed that the correlation coefficients between variables are all less than 0.65 and therefore, in accordance with standards proposed by Tabachnick and Fidell (2006) [89]. The possibility that the results are threatened by multi-collinearity is small. Harman's single-factor method was used to test for common method bias. In the absence of rotation, the first extracted factor explains only 28.75% of the variance, which is less than the 50% common standard. A single factor does not appear and the dependent and independent variables are loaded on different factors, suggesting there is no single factor to explain multiple variances. Therefore, the problem of common method bias is not observed.

4.5. Regression Analysis Results

In considering the control variables, we use the regression analysis to determine causal relationships between independent variables, the dependent variable and control variables (Table 8). Before performing the regression analysis, threats to the accuracy of the results from multi-collinearity must be eliminated. The VIF of various regression coefficients is calculated in the process of regression analysis. The results show that the maximum VIF is 1.59, far below the critical value of 10, thus reducing the possibility of any threat from multi-collinearity.

Table 8. Logistics regression analysis summary.

Variable	Step 1	Step 2	Step 3	Step 4
(Constant)	0.676	0.403	0.250	0.263
Enterprise size	−0.066	−0.081	−0.009	−0.052
Year established	−0.014	0.079	0.060	0.074
Sector	−0.046	−0.024	0.013	−0.013
Business size	0.119	0.028	−0.023	−0.015
Ownership	−0.216 **	−0.170 **	−0.108	−0.078
GPO		0.416 ***	0.355 ***	0.294 ***
Political Legitimacy		−0.061	−0.058	−0.004
Commercial Legitimacy		0.089	0.068	0.052
Institutional Uncertainty		0.010	−0.001	−0.024
GPO × Political Legitimacy			0.224 **	0.321 ***
GPO × Commercial Legitimacy			0.184 **	0.201 **
Institutional Uncertainty × GPO				0.107
Institutional Uncertainty × Political Legitimacy				0.030
Institutional Uncertainty × Commercial Legitimacy				−0.112
Institutional Uncertainty × Commercial Legitimacy × GPO				0.211 *
Institutional Uncertainty × Political Legitimacy × GPO				−0.394 **
Adjusted R Square	0.030	0.178	0.311	0.337
R Square Change	0.051	0.159	0.133	0.040
F Change	2.459 **	11.323 ***	22.594 ***	2.794 **

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

The moderating effect of GPO on green performance and that of political and commercial legitimacy on the relationship between GPO and green performance are examined through multivariate regression models. We have established regression model (1):

$$Y = \alpha + \alpha_1 X + \alpha_2 X_1 + \alpha_3 X_2 + \alpha_4 X_3 + \alpha_5 XX_1 + \alpha_6 XX_2 + \alpha_7 XX_3 + \alpha_8 XX_2 X_3 + \alpha_9 XX_1 X_3 + \mu_m \quad (1)$$

where Y represents green performance, X represents GPO, X_1 represents political legitimacy, X_2 represents commercial legitimacy, X_3 represents institutional uncertainties, μ_m represents error, α represents a constant, α_i represents the regression coefficient, and XX_n represents the interaction of two constructs (e.g., XX_1 represents the interaction between GPO and political legitimacy).

In examining the moderating effects, we refer to the method suggested by Baron and Kenny (1986) [90] using multiple variable regression to verify the aforementioned theoretical hypotheses. In the regression model: step 1 only considers the impact from the control variable, step 2 considers the main effects of the independent and control variables, step 3 adds the interaction between political legitimacy and commercial legitimacy and considers the moderating effect, and step 4 includes institutional uncertainty to consider the moderating effect of this control variable under two interactions.

In step 2, the significant coefficient is 0.416, $p < 0.001$, showing that the green proactive effect has a significant positive impact on green performance. Therefore, hypothesis 1 is supported. In step 3, the significant coefficient of the interaction between GPO and political legitimacy on green performance is 0.224, $p = 0.007$, and the significant coefficient of the interaction between GPO and commercial legitimacy on performance is 0.184, $p = 0.024$, indicating that political legitimacy and commercial legitimacy have significant promotional effects on GPO and green performance, as shown in Figures 2 and 3. Therefore, hypotheses 2 and 3 are supported. In addition, after the two interactions are introduced in step 3, the influence of GPO on green performance is still significant, with the significant coefficient value being 0.355 at $p < 0.001$.

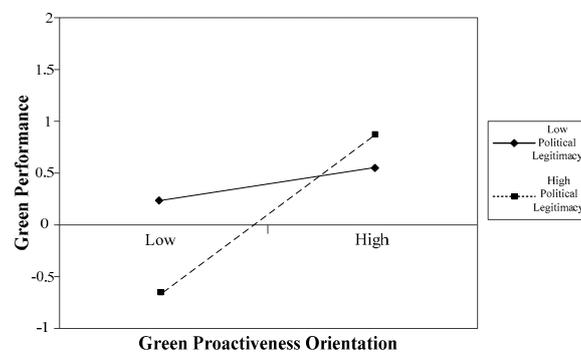


Figure 2. The moderating effect of political legitimacy.

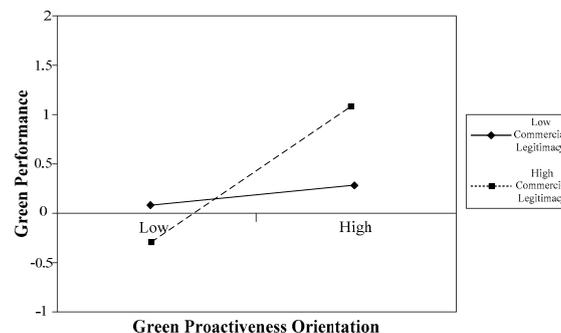


Figure 3. The moderating effect of commercial legitimacy.

Step 4 incorporated institutional uncertainty, investigating the sub-mediating effect between institutional uncertainty and legitimacy. Table 7 shows that the significant coefficient $GPO \times \text{political legitimacy} \times \text{institutional uncertainty}$ has a value of -0.394 , $p = 0.001$, whereas the significant coefficient $GPO \times \text{political legitimacy}$ has a value of 0.321 , $p < 0.001$, indicating that institutional uncertainty inhibits the moderating effect of political legitimacy between GPO and green performance. Hypothesis 4 is thus supported (Figure 4). In addition, the significant coefficient $GPO \times \text{commercial legitimacy} \times \text{institutional uncertainty}$ has a value of 0.211 , $p = 0.066$, whereas the significant coefficient $GPO \times \text{commercial legitimacy}$ has a value of 0.201 , $p = 0.020$, indicating that institutional uncertainty contributes to the moderating effect of commercial legitimacy between GPO and green performance. Hypothesis 5 is also supported (Figure 5).

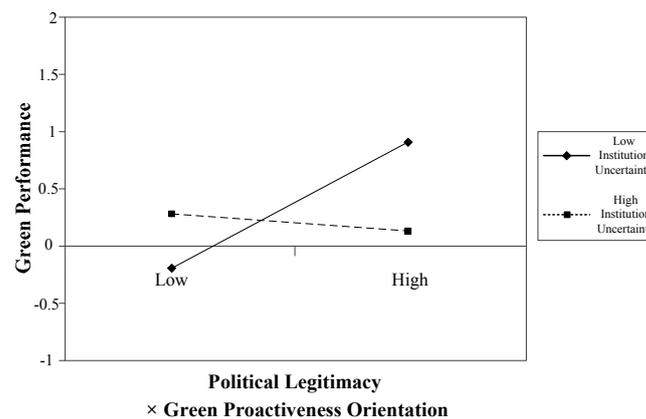


Figure 4. Sub-mediating effect between institutional uncertainty and political legitimacy.

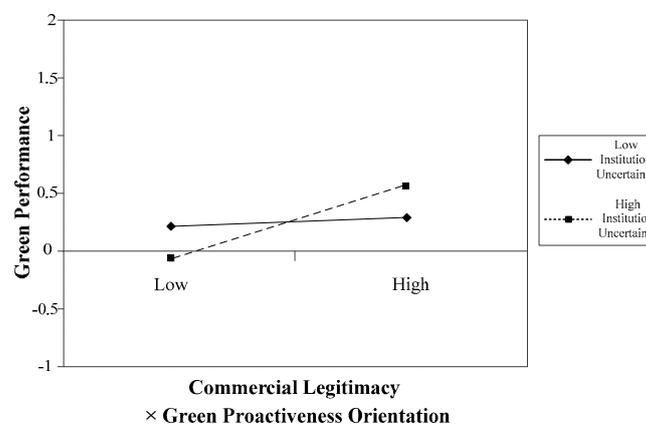


Figure 5. Sub-mediating effect between institutional uncertainty and commercial legitimacy.

5. Theoretical and Managerial Implications

5.1. Theoretical Implications

First, this study confirms a positive relationship between GPO and green performance, meaning start-ups that adopt GPO will have an advantage in achieving green performance. This empirical result shows different conclusions for green entrepreneurship and ordinary entrepreneurship. In the study of entrepreneurial orientation, which does not consider green performance as a prerequisite, a startup that adopts a proactive orientation will not necessarily achieve entrepreneurial performance [38]. The proactive advantage that pioneers pursue is likely to eventually become a proactive disadvantage, and the relationship between proactiveness orientation and entrepreneurial performance is not a simple linear one. In contrast, there is a linear relationship between GPO and green performance, which is not

influenced by the number or the behaviors of the followers. To some extent, these conclusions make up for the lack of research on entrepreneurial orientation and green entrepreneurship. Second, the research findings support the idea that high levels of legitimacy enhance the relationship between GPO and green performance, providing a better understanding of the role of legitimacy between GPO and green performance. Rarely do studies treat legitimacy as an institution-embedded binding mechanism and explore how different levels impact the interaction between GPO and green performance. More specifically, our findings support the idea that a high level of legitimacy enhances the relationship between GPO and green performance. Furthermore, legitimacy under institutional constraint for startups is not negative but positive. Legitimacy constraints can increase the motivation of startups to develop green entrepreneurship. This conclusion also breaks through prejudice to institute pressure to a certain extent. Our findings thus highlight that political legitimacy and commercial legitimacy should be considered when studying the role and the efficacy of GPO.

Lastly, the linkage between institutional theory and green entrepreneurship theory under the conditions of a transitional economy is addressed. As a positive factor, legitimacy can improve the relationship between GPO and green performance, but this conclusion will change against the background of transitional economics. Under a high degree of institutional uncertainty, political legitimacy will become an inhibitory factor, while the promotion of commercial legitimacy will be strengthened. For example, in an environment of highly uncertain institutions caused by gaps in policies and regulations and incomplete green standards for implementation, pioneering GE enterprises continue to exploit policy “loopholes” without being punished. Therefore, the institutional pressure on those enterprises decreases and the drive to gain political legitimacy will decline, inhibiting the promoting effect of political legitimacy between GPO and green performance. Conversely, with increased institutional uncertainty, enterprises need to obtain recognition from the public, suppliers and partners to achieve higher business performance. In this situation, the drive to gain commercial legitimacy will increase and the bidding power of commercial legitimacy on enterprises exerts greater pressure on those enterprises, thus resulting in commercial legitimacy playing a more prominent role in promoting the relationship between GPO and green performance. To a certain extent, this explains why in the transitional economy, Chinese enterprises find it difficult to implement green standards, prefer to seek “Guanxi”, exploit policy “loopholes”, focus excessively on business performance and the pursuit of profit above all else, compete viciously, and suffer from serious product homogeneity, among others. It can be seen that against the background of transitional economics, the effect of institutional legitimacy on the relationship between GPO and green performance is quite different, which is the main reason the factors of institutional uncertainty should be introduced into this article.

5.2. Managerial Implications

This study has several managerial implications. First, it finds that proactive green-oriented start-ups have an advantage in achieving green performance. This finding encourages both entrepreneurs and business managers in different industries to take GE actions ahead of their competitors, including the early introduction of new, environmentally friendly products, technology and green management. Senior managers need to often examine future industry trends, learn green development opportunities and act early to cope with change. These actions will help businesses gain a lead in pollution prevention, energy efficiency and safety compared to their peers.

Second, for green startups in different industries, proactiveness is correct, but the external legitimacy constraint should not be discounted. Pioneering green enterprises must not only manage their perception of governments and regulatory agencies but also attach importance to their evaluation by customers, suppliers and partners. The two legitimacies are both an institutional constraint and a positive drive to proactive green enterprises in achieving green performance. However, for the government, the lower the legitimacy of green enterprises, the more likely they are to conduct non-green business activities, and they should be the focus of green supervision and inspection.

Finally, for some Western developed countries, the country's institutional background is relatively stable. In this context, startups that are developing green entrepreneurship activities must simultaneously pay attention to the constraints of the government and the market, which is very helpful for green startups seeking to achieve green performance. In contrast, in some developing countries, the high degree of institutional uncertainty results in a poor political legitimacy constraint, and many ventures will pursue commercial legitimacy excessively, leading them to engage in vicious competition and produce homogeneous products. Thus, this conclusion is a warning to some governments: in addition to improving institutional standards as soon as possible, to increase the strength of moral propaganda, the government may also need to accelerate the integration of green criteria into society through extensive publicity so that the informal institution of social norms can participate in promoting green business operations.

6. Conclusions

This study reviewed the theory of entrepreneurship, green entrepreneurship theory, legitimacy theory and the theory of economic transition. By administering 235 questionnaires on green startups in China and applying relevant methodologies, we empirically verified the relationship between GPO and green performance, the moderating effect of institutional legitimacy between the two, and the influence of institutional uncertainty on the moderating effect of legitimacy. This research provides a unique perspective on GE, not only in integrating institutional theory and entrepreneurship theory but also by enriching the entrepreneurial scene and contributing to GE theory, legitimacy theory and situational theory.

This study finds that GPO and green performance have a positive correlation. Enterprises engaging in GE ahead of its competitors can obtain an advantage in green performance, including gains in emissions reduction, energy costs and unexpected incidents. In addition, the study concluded that both political and commercial legitimacy play a catalytic role in proactive green-oriented startups achieving green performance. In other words, the pressure exerted by legitimacy constraints is also a driving force, and institutional constraint is a positive variable: green startups must not only obtain recognition from the government and regulatory agencies but also pay attention to their evaluation by partners, customers and suppliers. The two legitimacies are both an institutional constraint and a positive drive to proactive green enterprises in achieving green performance. Considering the transitional economy of China, institutional uncertainty would enhance the promoting effect of commercial legitimacy between GPO and green performance while damaging that of political legitimacy. Because GE needs to balance commercial performance and social responsibility, it is subject to influences from institutional legitimacy. Furthermore, the institutional uncertainty existing in the transitional phase can have an impact on the effect of institutional legitimacy on green enterprises. This study sufficiently demonstrates that when institutional uncertainty is high, Chinese green enterprises tend to seek "guanxi", exploit policy "loopholes", pursue profit above all else and compete viciously. Therefore, institutional uncertainty against the background of transitional economics will inhibit the relationship between GPO and green performance, even aggravating market uncertainty and making green strategies no longer feasible for developing countries. Thus, the conclusions will be an important warning for governments.

Although our study integrated institution theory and entrepreneurship theory and contributed to GE theory under the scenario of a transitional economy, it has some limitations. First, the sample data were from Chinese green start-ups, which are generally different from Western enterprises. Whether the conclusions of this study have broader universal applicability is worth further investigation and future research. Second, we focused on the relationship between GPO and green performance and did not involve other dimensions of GEO in the study. In the future, we need to further explore the impact of green innovation and green risk-taking on green performance. Green risk-taking is especially important as its relationship with green performance may be non-linear. Third, the dependent variable that we examined was green performance and not financial performance. Although green

performance is an important part of sustainable development, enterprises might be more concerned about the financial performance and green behavior that can provide financial results. The study did not go deeper and analyze when green behavior might bring financial performance to enterprises. Future studies should further explore the relationship between GEO, green performance and financial performance. Fourth, future research may need to address other indicators of external legitimacy as this research only considered political legitimacy and commercial legitimacy. Therefore, the impact of other dimensions of legitimacy such as cognitive legitimacy or moral legitimacy may be worth exploring. Finally, we only examined the influence of institutional uncertainty on the moderating effect of legitimacy in a transitional economy. As a transitional economy includes an important dimension of market uncertainty, future research should focus on patterns of GE behavior under market uncertainty.

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