ABSTRACT

Title of Dissertation:	BETWEEN GLOBAL AND LOCAL STANDARDS: THE ADOPTION OF GLOBAL GREEN BOND STANDARDS IN CHINA
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This dissertation analyzes the political economy of green bonds and global green bond standards in China. This research explains two puzzles: (1) Why did China's green bond market grow faster than other emerging economies? (2) Why do some Chinese green bond issuers comply with international standards – the Green Bond Principles (GBP) or the Climate Bonds Standard (CBS), while others do not? Regarding the first question, this study argues that state capitalism, transnational climate governance, and support from top-level leadership are critical driving forces of the rapid development of green finance in China. In answering the second question, the variation in Chinese green bond issuers' compliance with international standards is determined by domestic regulatory agencies' preferences, firms' ties, and firm characteristics. Specifically, bond issuers will be more likely to comply with GBP and CBS when (1) domestic regulators encourage compliance with global standards or (2) the issuers have more political connections or Western linkages. Moreover, this study finds that firms' Western linkages could further moderate the effect of regulators' preferences.

BETWEEN GLOBAL AND LOCAL STANDARDS: THE ADOPTION OF GLOBAL GREEN BOND STANDARDS IN CHINA

by

Jiun-Da Lin

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Advisory Committee:
Professor Margaret M. Pearson, Chair
Professor Scott L. Kastner
Professor Virginia Haufler
Professor Jennifer Hadden
Professor Laixiang Sun

Dedication

To my parent, Zhe-Feng Lin and Ni-Chi Young

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While many individuals and organizations contribute to this dissertation, all errors and emissions are strictly my own.

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List of Abbreviations

Asset-backed securities (ABS)

Asset Management Association of China (AMAC)

State Administration for Quality Supervision and Inspection, Quarantine (AQSIQ)

Beijing Benz Automotive (BBAC)

Battery Electric Vehicles (BEVs)

Bank of Japan (BoJ, the central bank)

Climate Change Performance Index (CCPI)

China Banking Association (CBA)

Climate Bonds Initiative (CBI)

China Chengxin Credit Management (CCX)

China Development Bank (CDB)

Chinese Ecological Agriculture (CEA)

Corporate environmental responsibility (CER)

China Green Food Developmental Center (CGFDC)

China International Capital Corporation Limited (CICC)

China National Accreditation Service for Conformity Assessment (CNAS)

Certification and Accreditation Administration of China (CNCA)

Communist Party of China (CPC or CCP)

Climate Policy Initiative (CPI)

Corporate social responsibility (CSR)

China Securities Regulatory Commission (CSRC)

China Trustee Association (CTA)

Debt Capital Markets (DCM)

Dow Jones Sustainability Index (DJSI)

Development Research Centre, State Council of China (DRC)

European Investment Bank (EIB)

Environmental Performance Index (EPI)

Environmental, social, and governance (ESG)

Emissions trading schemes (ETSs)

Foreign Economic Cooperation Office of Ministry of Environment Protection (FECO)

Free cash flow to the firm (FCFF)

Financial Services Agency (FSA)

Green Finance Task Force (GFTF)

Green Finance Committee (GFC)

Hong Kong Stock Exchange (HKEX)

Investment Association of China (IAC)

Insurance Asset Management Association of China (IAMAC)

International Capital Market Association (ICMA)

International Finance Corporation (IFC)

International Federation of Organic Agriculture Movements (IFOAM)

International Organic Accreditation Service (IOAS)

The international institute of green finance, CUFE (IIGF)

International Institute for Sustainable Development (IISD)

Japan Railway Construction, Transport and Technology Agency (JRTT)

Key performance indicators (KPIs)

Local government financial vehicle (LGFV)

Luxembourg Green Exchange (LGX)

London Stock Exchange (LSE)

Luxembourg Stock Exchange (LuxSE)

Ministry of Economy, Trade and Industry (METI)

Medium-term lending facility (MLF)

Ministry of Agriculture (MoA)

Ministry of the Environment (MoE)

Macro-prudential assessment (MPA)

Monitoring, reporting, and verification (MRV)

National Development and Reform Commission (NDRC)

Intended Nationally Determined Contributions (INDCs or NDC)

Network for Greening the Financial System (NGFS)

National Association of Financial Market Institutional Investors (NAFMII)

Organic Food Development and Certification Center of China (OFDC)

China Organic Tea Research and Development Centre (OTRDC)

People's Bank of China (PBoC, the central bank)

Public and Private Partnerships (PPP)

Principles for Responsible Banking (PRB)

Priority Sector Lending (PSL)

Qualified Foreign Institutional Investor (QFII)

Reserve Bank of India (RBI, the central bank)

Return on investment (ROI)

Securities and Exchange Board of India (SEBI)

Assets Supervision and Administration Commission (SASAC)

Standardization Administration of China (SAC)

Sustainability Bond Guidelines (SBG)

Sustainable Banking Network (SBN)

Social Bond Principles (SBP)

State Environmental Protection Administration (SEPA)

Sustainability-Linked Bond Principles (SLBP)

Second party opinion (SPO)

Shanghai Stock Exchange (SSE)

Shenzhen Stock Exchange (SZSE)

Transnational climate governance (TCG)

United Nations Environment Programme Finance Initiative (UNEP FI)

United Nations Environment Programme Inquiry into the Design of a Sustainable Financial System (UNEP Inquiry)

Chapter 1: Introduction

Transnational governance has become a prominent element for addressing the climate crisis[1]. Transnational climate governance (TCG) emerged in the early 1990s and then took off after the 1997 Kyoto Protocol (Hale & Roger, 2017). An increasing number of sub- and non-state actors, such as cities, NGOs, and corporations, are getting involved in the cross-border networks of climate initiatives and have emerged as potentially transforming forces for the current global governance. For example, in 2018, more than 12,000 sub- and non-state actors participated in 190 transnational initiatives targeting the issue of climate change (UNFCCC, 2018). Also, the Paris Agreement in 2015 represents a new paradigm of global climate governance from a "regulatory" to a "catalytic and facilitative" model (Hale, 2016). First, states have agreed on the bottom-up approach – so-called "nationally determined contributions" (NDCs) – to reduce carbon dioxide emissions. Second, Article 2 of the agreement emphasizes "making finance flows consistent with a pathway toward low greenhouse gas emissions and climate-resilient development," promoting the idea of "green finance." Third, the agreement strongly encourages civil society, the private sector, financial institutions, cities and other subnational authorities, local communities, and indigenous people to participate in climate actions. In other words, the agreement recognizes the importance of both non-state actors and green finance for global climate governance.

[1] Transnational governance could be defined as "processes in which non-state actors adopt rules that seek to move behavior toward a shared, public goal in at least two states"(Roger & Dauvergne, 2016). Transnational governance has emerged in many issue areas but is particularly salient in the environmental issues (Reinsberg & Westerwinter, 2021).

Moreover, on the issue of green finance, non-state actors have not only played a role of cross-border advocacy networks but also private authority; in addition, they have established global standards for other actors to follow. For example, the International Capital Market Association (ICMA) proposed the Green Bond Principles (GBP), and the Climate Bonds Initiative (CBI) constructed the Climate Bonds Standard (CBS). They both actively spread their standards to the world, especially encouraging diffusion of norms to emerging markets.

China is one of the emerging economies and has garnered massive attention from transnational private authorities. The number of the transnational climate governance organizations active in China rose markedly between 2005 and 2007 (Hale & Roger, 2017). One major reason could be that China became the world's largest emitter of greenhouse gases in 2006. To effectively mitigate climate change, transnational climate governance has to include Chinese actors. Furthermore, China has experienced serious environmental degradation, such as air and water pollution, during its economic growth to the second-largest economy in the world. The environmental crisis in China has engendered the need for more interventions from transnational private authorities.

The other reason might be that China, under the domestic political and economic pressures, has shifted its passive attitude in the past to a proactive stance on global climate governance (Pearson, 2019; Wu, 2016). The Chinese government has set obligatory environmental targets since the 11th Five-Year Plan in 2006, started to experiment the carbon trading in seven pilot emissions trading schemes (ETSs) in

2014[2], and massively supported clean energy industries and technologies. In 2014, China and the United States reached a Joint Announcement on Climate Change, which has become a crucial foundation for the Paris Agreement. Even in the context of the US retreat from climate leadership since 2016, China has continued to signal its ambition for the leadership of global climate governance. For example, during its presidency of the G20 in 2016, China launched a Green Finance Study Group (GFSG), which incorporated green finance into the G20 agenda for the first time. Among the members of the G20, China is also the major country that delivers the most extensive commitments on green finance (Table 1.1). In 2017, China and the EU reached a bilateral agreement on climate for the first time. In 2020, China further promised to become carbon neutral before 2060. Altogether, possibly owing to ambitious climate commitments and actions from China, many transnational actors might expect more transnational collaborations, leadership, and responsibilities from China.

[2] Domestic voluntary carbon markets have proliferated in China since 2008. Beyond the seven ETSs, other cities also have emission trading plans.

Table 1.1 Progress in Green Finance Among G20 Members (2017)

G20 member	1. Provide Strategic Policy Signals and Frameworks	2. Promote Voluntary Principles for Green Finance	3. Expand Learning Networks for Capacity-building	4. Support the Development of Local Green Bond Markets	5. Promote International Collaboration to Facilitate Cross-border Investment in Green Bonds	6. Encourage and Facilitate Knowledge-sharing on Environmental and Financial Risk	7. Improve the Measurement of Green Finance Activities and their Impacts
Argentina	✔			✔			
Australia	✔			✔			
Brazil				✔	✔	✔	
Canada	✔			✔	✔		
China	✔	✔	✔	✔	✔	✔	✔
France	✔	✔		✔	✔	✔	
Germany	✔		✔	✔		✔	
India	✔			✔	✔		
Indonesia	✔		✔	✔		✔	
Italy	✔			✔			
Japan				✔			
Mexico	✔			✔	✔		✔
Russian Federation				✔		✔	
Saudi Arabia			✔				
South Africa	✔			✔	✔		
South Korea		✔		✔			
Turkey				✔			✔
UK	✔		✔	✔	✔	✔	✔
US				✔		✔	
EU	✔			(N/A)	✔		
International	✔	✔	✔	✔		✔	✔

Source: UN Environment Inquiry (2017)

The Puzzles

The rapid development of green finance in China is rather puzzling when we compare China's climate policies with those of other emerging economies. According to the Climate Change Performance Index (CCPI), the ranking of China in 2019 is 33[3], which is behind India (10), Brazil (22), and Mexico (25) (Burck et al., 2019). Also, according to the Climate Change Laws of the World database, China only has four laws that are explicitly related to climate change; in this regard as well, China lags behind India (5), Brazil (13), and Mexico (10) (Climate Change Laws of the World database, 2020). In contrast to the lagging climate policy performance and legislation for climate change in China, why is the development of green finance in China faster than in India, Brazil, and Mexico?

Moreover, under the trend of green finance, variation in the quality of Chinese green bonds also presents a puzzle for existing theories. Green bonds are innovative financial instruments created by governments, banks, or firms for exclusively investing in projects with environmental or climate-related benefits, such as energy efficiency and the cultivation of environmentally friendly technologies[4]. To determine whether a bond qualifies as "green" or not, the ICMA has proposed the GBP, and the CBI has constructed a stricter CBS in accordance with the GBP[5]. To receive the "Climate Bond

[3] Specifically, based on four components of the CCPI, China got *very low* for GHG Emission, *medium* for Renewable Energy, *very low* for Energy use, and *high* for Climate Policy.
[4] The types of green bond are demonstrated in Appendix 1.
[5] ICMA is a self-regulatory organization which aims to promote resilient and well-functioning international debt capital markets. It currently has more than 530 members located in over 60 countries worldwide and its members include issuers, intermediaries, investors and capital market infrastructure providers. CBI is a London-based INGO which promotes Climate and Green Bonds for climate change

Certified" stamp of approval, a prospective issuer of a green bond must appoint a third-party verifier approved by the CBI. This verifier will provide a verification statement annually that the bond meets the CBS. All Climate Bond Certifications will receive the final confirmation provided by the CBS Board.

Because participating in the CBS could produce benefits for investors and issuers[6], according to existing theories, one would expect the third-party certification to be commonly adopted by green bond issuers. In other words, the issue of the green bonds should be the most-likely case for the compliance with private authority. However, very few Chinese green bonds are certified by the CBI, which is around 36% of Chinese green bonds issued overseas (Table 1.2). Among the onshore Chinese green bonds, according to the data from Green Finance Committee, China Society for Finance and Banking, approximately 54.55% of the Chinese green bonds have received third-party verification from a local agency. In short, not all Chinese green bonds adopt the CBI's certification scheme or even the domestic third-party verification.

Moreover, beyond certification, certain Chinese green bonds even have trouble meeting the CBI's taxonomy of green bonds, because their use of proceeds is not eligible, or allocation of proceeds allows 50% of bond proceeds to fund general working capital or debt. The CBI's data reveal that around 44% of Chinese green bonds

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solutions.

[6] For investors, the CBS certification could save investors' time and money in analyzing low-carbon credentials of investments across sectors and asset classes, and investors can track the impact of their investment through reporting required under the CBS. For issuers, on the one hand, the CBS certification could signal the low-carbon integrity of the bond, enhance the issuers' reputation, and provide easier-to-find information for potential investors. For big companies, they could use the label to highlight their sustainable credentials; little-known renewable energy companies could also get the attention of ethical investors through the label. On the other hand, regarding the costs, issuers need to afford the annual fee for external review, which ranges from $10,000 to $50,000, and other costs of disclosure. Moreover, issuers will suffer from the reputational cost, such as being accused of "greenwashing," if their bonds do not commit to the CBS.

in 2019 only meets domestic definition of green projects and contradicts the international definition, an increase from 34% in 2016 (Boulle et al., 2017; Meng et al., 2020). If the third-party certification could provide huge benefit of credible commitment, why did some Chinese green bond issuers still choose not to adopt third-party certification? Also, why did some Chinese green bond issuers not comply with the CBI's definition of the green bond?

Table 1.2 Chinese Green Bonds Certified by the CBI

Issuer	Month of issuance	Amount	Jurisdiction of issuance
Three Gorge Corporation	June 2017	USD725.9m	Ireland
Industrial and Commercial Bank of China	October 2017	USD2.15bn	Luxembourg
Bank of China Paris Branches	November 2017	USD1.5bn	France
China Development Bank	November 2017	USD1.62bn	Hong Kong and Germany
Industrial and Commercial Bank of China	June 2018	USD1.58bn	UK
Bank of China London Branch	June 2018	USD1bn	UK
China Construction Bank Luxembourg Branch	September 2018	USD589m	Luxembourg
Bank of China Tokyo Branch	November 2018	USD379m	Japan
Industrial Bank Co., Ltd Hong Kong branch	November 2018	USD942m	Hong Kong
Jiangsu Financial Leasing	April 2019	USD149m	China
Shanghai Pudong Development Bank London branch	October 2019	USD300m	UK
China Construction Bank	October 2019	USD1.589bn	Hong Kong
Bank of China Macau Branch	October 2019	USD963m	Hong Kong

Note: Until 2019, there have been 36 Chinese issuers issued green bonds overseas, and there are 13 Chinese green bonds have been certified by the CBI.
Source: CBI website

The case of Wuhan Metro Group Co., Ltd further illustrates the puzzle. Wuhan Metro is a state-owned enterprise in Wuhan Province. Similar to many metro companies in other provinces, Wuhan Metro has issued five regular bonds to finance its subway projects since 2013. However, since 2016, Wuhan Metro has become the first metro company in China to issue domestic green bonds. Moreover, in 2016 and

2017, Wuhan Metro issued two medium-term notes with third-party certification, but the certification agency itself was not verified by the CBI. In 2017 and 2018, Wuhan Metro issued two green bonds without any third-party certification. The case of Wuhan Metro raises several questions: why did the company start issuing green bonds, while other Chinese metro companies did not? Why did Wuhan Metro not participate in the CBS? Why did Wuhan Metro issue green bonds with third-party certification for some parts of the project, while it did not do so for others?

This project first seeks to investigate the institutional condition for China's rapid development of green finance and then to understand why some Chinese green bond issuers comply with the CBS, while others do not. To explain firms' compliance with the global standards, existing studies have either emphasized global connectedness or domestic institutions. The global-connectedness approach asserts that firms are more likely to participate in global standards when they have international economic and sociological networks with advanced countries. The domestic-institution approach underscores the fact that firms' participation in global standards can be affected by the strength of regulation, policies, or business-state relationships.

However, both approaches are unable to explain the variation in Chinese green bond issuers' compliance with the CBS. On the one hand, the scholarship that focuses on global connectedness cannot explain why some internationalized Chinese firms chose not to comply with the global standards. On the other hand, the approach highlights that domestic institutions cannot answer why Chinese firms produce different compliance outcomes under the same institutional environment. This study contends that both global connectedness and domestic institutions are crucial in

understanding firms' choices but exiting approaches tend to overlook firms' networks with multiple stakeholders and the interaction between domestic regulation and firms' networks.

Extant Literature

Compliance with international rules and standards has been a theme of prime importance in the literature on international relations[7]. This scholarship intends to understand why and how states comply with international rules and standards. In general, there are four main approaches to explain compliance outcomes: rationalist approach, constructivist approach, power approach, and domestic politics approach[8]. Although these approaches provide insightful mechanisms to explain states' compliance outcomes, they do not directly help us understand the variation in the compliance outcomes among non-state actors.

[7] Compliance can be defined as an "state of conformity between an actor's behavior and a specific rule"(Raustiala & Slaughter, 2002). In other words, compliance occurs when actor behavior is consistent with accepted standards. This usage of compliance is closer to "first-order compliance" (Fisher, 1981). Compliance in practice is a matter of degree, and it could include mock compliance and substantive compliance (Walter, 2008). In the case of green bond, when the targeted standard is Climate Bonds Standard, no certification in a given green bond could be viewed as non-compliance, and certification outside CBI could be viewed as mock compliance. Only when issuers participate in Climate Bond Certification, which means their behaviors will be monitored by CBI, it could be closer to substantive compliance.

[8] The rationalist approach focuses on states' calculation of costs and benefits, states' the demand for credible commitment, reputational cost, and the enforcement of rule (Downs, Rocke, & Barsoom, 1996; Simmons, 2000). The constructivist approach emphasizes legitimacy, reputation, persuasion, and socialization as the primary driving force of states' compliance (Finnemore & Sikkink, 1998; Hurd, 1999; Johnston, 2014). The power approach argues that hegemony or great powers are the primary actors determine the global regulatory outcomes (Drezner, 2008; Simmons, 2001). Finally, the domestic politic approach focuses on how domestic actors and institutions shape states' preference toward international rules (Dai, 2007; Kent, 2007; Vreeland, 2008; Walter, 2008).

A more useful starting point is the literature on transnational private governance (or transnational business governance), which focuses on the roles of private authority in global governance. Private authority is a situation wherein non-state actors define rules or determine standards that other relevant actors in world politics adopt (Green, 2013), and it has become an increasingly important phenomenon in global governance across diversified issue areas (Auld, 2014; Avant et al., 2010; Black, 2001; Büthe & Mattli, 2011; Camfferman & Zeff, 2007; Cashore et al., 2004; Cutler et al., 1999; Dingwerth, 2007; Djelic & Sahlin-Andersson, 2006; Graz & Nölke, 2007; Green, 2013; Hale & Held, 2012; Hall & Biersteker, 2002; Haufler, 2001; Hoffmann, 2011; Marx et al., 2012; Risse, 1995; Roger & Dauvergne, 2016). For example, scholars have observed that the number of climate-related private transnational regulatory organizations is growing faster than climate-related intergovernmental organizations (Abbott et al., 2016). Also, studies have found that the global standards created by private authority have had conditional effects on consumers' behaviors and environmental performance (Hainmueller et al., 2014; Prakash & Potoski, 2014).

To explain the rapid emergence of private authority, scholars have provided explanations from the perspectives of club theory (Potoski & Prakash, 2009, 2013), theory of supply and demand (Büthe, 2010; Green, 2013), experimentalism (Overdevest & Zeitlin, 2014), political-institutional approach (Bartley, 2007), convention theory, neo-Gramscian perspectives, and the theory of organizational ecology (Abbott et al., 2016). Though these theories can explain the emergence, evolution, and variation of private authority across issue areas, they are unable to satisfactorily answer why in the same issue area, some non-state actors comply with

the private authority, while others do not. Bartley (2010) argued that the certification of global standards can be viewed as a chain of demands and assurances, by which rules, and enforcement activities pass through several actors and locations. Most existing theories focus on the top of this chain rather than its bottom.

Admittedly, club theory (Potoski & Prakash, 2009, 2013) could provide partial explanations to this puzzle. Although this theory was established to explain why private regulation emerges rather than compliance with that regulation, it did furnish some valuable insights regarding why firms may or may not be interested in participating in the voluntary collective action. Club theory assumes that agents make choices on the basis of a calculation of the costs and benefits of likely outcomes, and they have considerable freedom to alter their choices. In accordance with these assumptions of calculated strategic agents, the club theory suggests that firms will not join the CBP or CBS when benefits of complying with the private authority are nonexcludable or when the stakeholders have difficulty verifying firms' behavior.

However, for the case of green bonds in China, the CBI established the CBS as a club good and provided information on firms' behaviors for stakeholders. Under this situation, the club theory predicts that firms should participate in the CBS; however, in reality, many firms in China still do not comply with the CBS. In other words, the mechanisms of club theory cannot fully and unambiguously explain the variation in firms' compliance with private authority. As Potoski & Prakash (2009) acknowledge, the attractiveness of a given club is likely to vary with the institutional and stakeholder context, in addition to firm-level characteristics. A limitation of club theory worth

noting is that it does not further explore how structural and firm-level factors influence firms' compliance with global standards.

To explain the variation in non-state actors' compliance with global standards, there is another rich research tradition that accentuates the role of international economic and sociological networks in the diffusion of global standards. For example, studies have found that export dependence and the position in global production network (Auld et al., 2008; Cashore et al., 2004; Corbett & Kirsch, 2009; Garcia-Johnson, 2000; Greenhill et al., 2009; Guler et al., 2002; Neumayer & Perkins, 2004; Overdevest, 2010; Perkins & Neumayer, 2010; Potoski & Prakash, 2004), foreign direct investment (Neumayer & Perkins, 2004b; Perkins & Neumayer, 2010), and international networks of nongovernmental organizations (Potoski & Prakash, 2004) will make firms more likely to comply with global environmental or labor standards. The case studies of China also further corroborate that global connectedness increases firms' likelihood of complying with global environmental and labor standards (Bartley & Lu, 2012; Christmann & Taylor, 2001; Qi et al., 2011; Zeng et al., 2005). However, the most noteworthy theoretical limitation of this research tradition is that it tends to ignore or underestimate the impact of domestic political factors on firms' compliance with global standards. Another empirical limitation worth mentioning is that many studies of this research tradition is based on country-level data rather than firm-level data.

Recent studies have attempted to fill this lacuna (Andonova, 2014; Andonova et al., 2017; Bartley, 2010, 2011; Büthe & Mattli, 2011; Espach, 2009; Prakash & Potoski, 2006; Roger et al., 2017). Studies have found that domestic institutions,

regulation, and policies did affect firms' participation in global governance (Berliner & Prakash, 2014; Cao & Ward, 2017; Delmas, 2002; Drezner & Lu, 2009; Kollman & Prakash, 2001; Roger et al., 2015; Schleifer & Sun, 2018; Zhu et al., 2005, 2013; Zhu & Sarkis, 2016). For example, as per the Business Environment and Enterprise Performance Survey from 30 countries in Eastern Europe and Central Asia, the states with strong regulatory institutions are important actors that influence firms' ISO certification (Berliner & Prakash, 2014). They also found that firms in weak regulatory institutions are more likely to adopt ISO certification for international commercial audiences (Berliner & Prakash, 2013, 2014). In addition, by investigating the certification of sustainable forestry and labor in Indonesia, Bartley (2010) points out that the variation in certification outcomes can be explained by business-state relationships, the clarity and legitimacy of property rights, and the existence of a domestic coalition for certification. However, even though recent studies have revisited the importance of domestic political conditions, existing scholarship tends to downplay the firm-level characteristics and fails to explain why firms respond to certification of global standards differently under the same domestic regulation.

Taken together, extant literature on transnational private governance is still unable to clarify how the interaction between domestic regulation and firms' networks determines firms' compliance outcomes. This study aims to fill this gap by revisiting the tradition of institutional theory from multiple disciplines. The recent works of institutional theory have emphasized the moderating effect of firm characteristics (Delmas & Toffel, 2004) and firms' institutional strategies in emerging economies (Marquis & Raynard, 2015). In accordance with the assumptions from the institutional

theory, this dissertation seeks to develop an analytical framework to explain the variation in firms' compliance with global private standards in emerging economies.

Argument

This study argues that domestic institutions, particularly the system of state capitalism, has played a crucial role of mobilizing resources in China's rapid development of green finance, while transnational private authorities with the support from domestic leadership set up the comprehensive reform agenda in the initial stage. As the strategic sector is controlled by the state, the financial sector, especially state-owned banks, has become the Chinese government's main leverage to quickly promote the ideas and practices of green finance. However, state capitalism alone cannot explain the whole story. As discussed, transnational climate governance with the support from top-level leadership provided vital momentum for the development of green finance in China by diffusing new policy ideas.

As per the institutional theory, this dissertation further contends that the variation in Chinese green bond issuers' compliance with the CBS is driven by the domestic regulation, firm's networks, and their interaction effect. My argument follows two steps. First, the fragmented bureaucracy in China generated regulatory agencies with different policy preferences. One group of regulatory agencies, such as the PBoC, encourages green bond issuers to adopt external review, which is closer to the GBP and CBS, while another regulatory agency, the NDRC, does not. When a domestic regulatory agency does not encourage green bond issuers' compliance with the GBP and CBS, issuers will have a weaker incentive to comply with the GBP and CBS. In other words, the

fragmented bureaucracy in China can partly account for the variation in Chinese green bond issuers' compliance with the GBP and CBS.

However, fragmented bureaucracy in China is not the whole story of green bond issuers' compliance with global private standards. The second step of my argument underlines the effect of firms' networks on their strategies toward compliance with global standards. Firms' level of compliance will be based on their calculation of reputational benefits and adjustment costs. Firms will be more likely to comply with global standards only when the net benefit is higher than compliance with domestic standards or non-compliance. I argue that firms' networks will strongly influence their compliance outcomes, and two types of ties are especially important to shape firms' calculation of cost and benefit: the government-business relationship and the Western linkages.

I contend that firms' ties will generate the following effects. First, if firms have a closer relationship with the PRC government, the former will be more likely to obey regulators' policy. Thus, when the government encourages the compliance with global standards, these firms tend to follow the government's policy signal. Second, when firms have Western linkages to a greater extent, Chinese firms will be more likely to comply with global standards to receive higher reputational benefit from Western stakeholders. Finally, the Western linkages have a moderating effect on the regulation. Even when the regulatory agency does not encourage firms' compliance with global green bond standards, the Chinese firms with more Western linkages will still have an incentive to comply with global standards.

Contributions

This study has contributed to the literature pertinent to transnational private governance and low-carbon transition in a number of ways. First, this study establishes a firm-level framework that can explain the variation in firms' compliance with global private standards, which complements the prior country-level studies on transnational private governance. Second, this study supplements the literature on institutional theory by unpacking the effects of regulatory agencies' divergent preferences, firms' political connections and Western linkages, and the moderating effect of Western linkages on domestic regulations. Compared to existing approaches, the framework of this study can better examine the politics of transnational private governance. Third, by means of a unique dataset and mixed methods, this study advances the existing knowledge on the implantation of transnational private governance by providing the first evidence on the determinants of variation in Chinese green bond issuers' compliance outcomes. Forth, beyond the firm-level analysis, this study expands the existing understanding of the role of state, fragmented bureaucracy, and transnational private governance in the political construction of markets in emerging economies. Finally, this dissertation contributes to the scholarship on the formation of green bond market and green bond policies by providing in-depth case studies. This research also advances the studies of green bond certification by identifying factors that promotes the credibility of green bonds.

Methodologies, Data, and Summary of Findings

This study followed a mixed-method research design and a four-tiered nested analysis process. First, the case of China was selected, and the process tracing analysis identified some new variables to explain the rapid development of green finance in China. The with-in case analysis also provides the context and background for understanding firms' behaviors in China. To further explain the perplexing variation in Chinese firms' compliance with global green bond standards, a firm-level model was established, and several main hypotheses were generated. Second, regression analysis was adopted to test the main hypotheses using the proposed model. The statistical analysis substantiates the correlations between the dependent variable and independent variables. Third, a comprehensive description of the main actors' incentives and their decision environment is provided through case studies of Chinese green bond issuers. The case studies also examine the causal effect of main independent variables and identify the causal mechanisms under the hypotheses. Finally, a comparative analysis was adopted to explore whether the framework could be applied to a different emerging market and issue area.

This dissertation is organized into seven chapters. Chapter 1 lays out the research background, research questions, existing scholarship, argument, methodologies, and data sources.

Chapter 2 analyzes the development of green finance in China to provide the necessary context to begin investigating the firm-level research question in this dissertation. The process-tracing method was used in this chapter to demonstrate how

transnational governance, top-level leadership, and state capitalism affect the development of green finance. By combining field interviews, participant observation, web-based archival research, and a review of secondary literature, this chapter presents a chronological account of how the institutions of green finance were developed in China. The fieldwork was conducted between July 2018 and April 2021 (Appendix 2). The data sources of primary and secondary materials include China Financial Information – Green Finance (绿色金融-中国金融信息网), several WeChat public accounts, China Knowledge Resources Library (CNKI), reports published by China Finance Press (中国金融出版社), the CBI, and other international organizations. The exploratory qualitative analysis confirms the salience of some key independent variables, regulations, and ownership for the quantitative analysis presented in Chapter 4. Chapter 2 first demonstrates the variation in the development of green finance across emerging economies. Drawing on low-carbon transition scholarship, this chapter argues that transnational climate governance, support from top-level leadership, and state capitalism played crucial roles in promoting rapid development of green finance. This chapter traces the emergence and development of green finance in China between 1999 and 2021. The rapid development of green finance in China is triggered by a coalition of Chinese and global policy entrepreneurs, and the state-owned enterprises and banks play a leading role in creating the green bond market. Although state capitalism can quickly create the infrastructure for green finance, this chapter underscored certain limitations of state capitalism.

Chapter 3 establishes a firm-level framework to explain the variation in firms' compliance with global environmental standards. This chapter begins with a review of

institutional theory. In accordance with certain assumptions from institutional theory, this framework further focuses on regulatory agencies' preferences, properties of firms' ties, and the moderating effect of Western linkage on regulatory pressure.

Chapter 4 presents a large-N regression analysis to test the main hypotheses from the models developed in Chapter 3. The main data sources include the WIND Financial Terminal, the Bloomberg Terminal, the CBI's green bond database, and the prospectus of green bond, which covered a period of three years (2015–2018). This chapter first examines how green bonds are governed and issued in global market and China. It then outlines main hypotheses from the framework described in Chapter 3 and finally introduces the research design. The findings from the quantitative analysis show that regulatory agencies' preferences, Western linkages, and political connections have conspicuous effects on firms' compliance with the CBS. Moreover, the findings reveal that the interaction between regulatory agencies' preferences and Western linkages also has a noteworthy impact on firms' compliance outcomes.

Chapter 5 provides the case studies of green bond issuers in China to further examine main hypotheses. The firm-level data primarily come from firms' annual reports and websites, exchange markets, and Sina Finance. The in-depth case studies first provide a detailed description of the main actors' incentives, characteristics, and their decision environment, and then, the with-in case analysis provides evidence for causal effects and causal mechanisms to corroborate the main hypotheses of this study.

Chapter 6 aims to test whether the model could be extended to the cases of green bond in India and organic food in China. The chief data sources include firms' annual reports, firms' websites, Sina Finance, government's websites, secondary literature,

and relevant reports from international organizations. Through the with-in case comparison, the case of India supports the effect of regulatory agencies' preferences on firms' compliance outcomes. In addition, the case of organic food in China provides pertinent evidence regarding the influence of Western linkages. The findings of the selected case studies suggest that the framework could be generalizable under specific conditions.

Chapter 7 summarizes the key empirical findings in previous chapters and then discusses the contributions of this study to existing scholarships. This chapter also elaborates on broader implications for academic debates and policies. This chapter concludes by underlining the limitations of this study and the possible directions for future research.

Chapter 2: The Development of Green Finance in China

Introduction

Since the 1990s, the idea of greening financial institutions has emerged and been practiced by states, non-state actors, and international organizations. In 1992, the UNEP Statement by Banks on the Environment and Sustainable Development was launched. The Equator Principles was introduced by the International Finance Corporation (IFC) and some major banks in 2003. In 2006, the UN Principles for Responsible Investment was launched. This "quiet revolution" is aiming to make the financial system more inclusive and environmentally-sustainable, directing capital flows from brown industries to green projects. In early 2014, the United Nations Environment Programme Inquiry into the Design of a Sustainable Financial System (UNEP Inquiry) was established. The UNEP Inquiry started to collaborate with many states, non-state actors, and international initiatives, actively promoting the idea of sustainable financial system.

Although the transnational governance of green finance has become more influential, the pace of financial greening differs across emerging economies. To measure the progress of sustainable finance in emerging markets, the Sustainable Banking Network (SBN)[9] has constructed a measurement framework to assess the efforts of its member countries, and the SBN Progression Matrix provides an overview

[9] The idea of SBN origins from a forum, hosted by IFC and CBRC in May 2012, and it was formed in September 2012 by the support from IFC. It currently has 43 members countries, including financial regulatory agencies and banking associations from emerging markets.

of member countries' progress. The 2019 SBN Progression Matrix (Figure 2.1) shows this variance.

Figure 2. 1 SBN Progression Matrix with Assessment Results

Source: Sustainable Banking Network (2019, page 5)
Note: The SBN's measurement framework uses 19 indicators and 55 underlying questions to assess member countries' progress.

Why do some countries show faster growth of green finance than others? An emerging scholarship has argued that the pace of low-carbon transition is not just determined by technological and economic development but also political conditions (Breetz et al., 2018; Delucchi & Jacobson, 2011; Hess, 2014; Roberts et al., 2018). Based on this literature, this chapter examines the political economy of green finance in emerging countries. Drawing on a cross-nation comparison, I argue that emerging economies with (a) features of state capitalism and (b) transnational assistance on climate governance can more rapidly develop infrastructures[10] for green finance.

[10] The infrastructures include policy guidelines, capacity-building for market participants, and institutions of external review.

To illustrate my argument, this chapter traces the institutional development process of the green finance in China. The case of China shows that regulatory agencies, with the assistance of global policy entrepreneurs, set up domestic standards of green finance, and the governmental standards are actively followed by state-owned banks and enterprises. By leveraging the financial sector, China's state capitalist system quickly created a market for green bonds. In addition, the process-tracing case study of China further reveals the effect of state capitalism has limitations on promoting the development of green finance.

For the whole thesis, this chapter provides macro-level foundations for firm-level arguments in succeeding chapters. First, this chapter describes green bond policies in China are embedded in a broader new policy agenda of green finance. It explains how the green bond market is a new phenomenon compared to previous green credit policies. Second, this chapter identifies the critical role of state and transnational climate governance in creating the green bond market. It highlights the state and international factors that will be examined in the following chapters. Third, this chapter mentions the effect of fragmented bureaucracy on domestic standards, which sets up subsequent arguments in Chapters 3 and 4. In short, this chapter provides a big picture of green bond market in China, and the following chapters pinpoint Chinese firms' behaviors in the green bond market.

The historical narrative in this chapter is based on archival research on PRC government's policy guidelines and work plans, official announcements, media stories, and professional reports. Some perspectives also come from in-person and online interviews conducted between July 2018 and April 2021 (Appendix 2).

This chapter is organized as follows. Section 2 reviews whether state capitalism is a critical condition for the rapid growth of green finance in emerging markets. To explain the deviant case of China, this section focuses on the unique features of China's state capitalism, transnational climate governance, and top-level leadership. Section 3 provides a political account on the development of green finance in China by unpacking the effects of state capitalism, transnational climate governance, and top-level leadership. Section 4 highlights the unique features of China's state capitalism by comparing paths of development of green bond markets in India and Japan. Section 5 further demonstrates the mixed effects of China's state capitalism on promoting green finance. Section 6 summarizes the main findings and limitations of this chapter.

Argument

Why do some countries have fast low-carbon transitions, while others have slow transitions? Existing studies have identified several political and institutional factors which could determine countries' climate policy outcomes. Some scholars focus on the balance of power between low-carbon and carbon-intensive economic actors (Aklin & Urpelainen, 2013; Hughes & Urpelainen, 2015; Meckling, 2014), while others emphasize the role of policymaking institutions, such as pluralism and corporatism (Mildenberger, 2020), electoral systems (Harrison, 2010; Lipscy, 2018), veto points (Madden, 2014), and bureaucratic policy design (Meckling & Nahm, 2018).

Although most of the existing approaches are based on empirical evidence from developed countries, some recent studies have started to investigate the variation in climate policies in emerging economies. For example, existing literature has pointed out that the domestic political institutions and the global climate change regime both

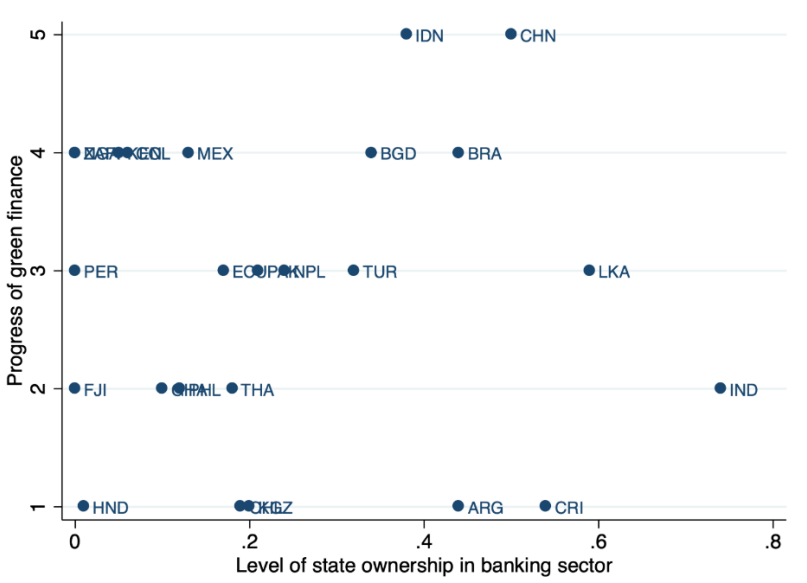
may influence state and non-state actors' climate policies in emerging countries (Alizada, 2018; Andonova & Sun, 2019; Alves et al., 2019; Fadly, 2019; Heggelund et al., 2019; Hochstetler, 2020; Stadelmann & Castro, 2014). Particularly, studies have found that state capacity and state–business relations are significant factors for explaining climate policy outcomes in developing countries (Hochstetler, 2020; Hochstetler & Kostka, 2015).

Building on prior studies, this chapter attempts to explore how state capitalism affects the development one particular climate-related outcome in the context of China: green finance. State capitalism refers to political-economic systems in which the state maintains a dominant role, especially in strategic sectors, among the presence of substantial domestic private sectors (Pearson et al., 2021). State capitalism can involve a wide array of properties and practices. Some scholars emphasize state ownership, state-controlled capital, and state-directed capital as the main feature of state capitalism (Aguilera et al., 2016; Bruton et al., 2015; Musacchio et al., 2015; Musacchio & Lazzarini, 2014), while others also focus on state intervention, such as investment, industrial policy, tariffs, subsidies, formal and informal networks, in economic production and the functioning of markets (Musacchio et al., 2015; Nölke, 2014; Wright et al., 2021).

Based on conventional views on state capitalism, if we use the level of state ownership in banking sector as the proxy measurement of state capitalism, the level of state ownership may have a non-linear relationship with the progress of green finance in emerging countries. Figure 2.2 presents a scatter plot of countries' progress in green finance and level of state ownership in the banking sector. Figure 2.3 further shows

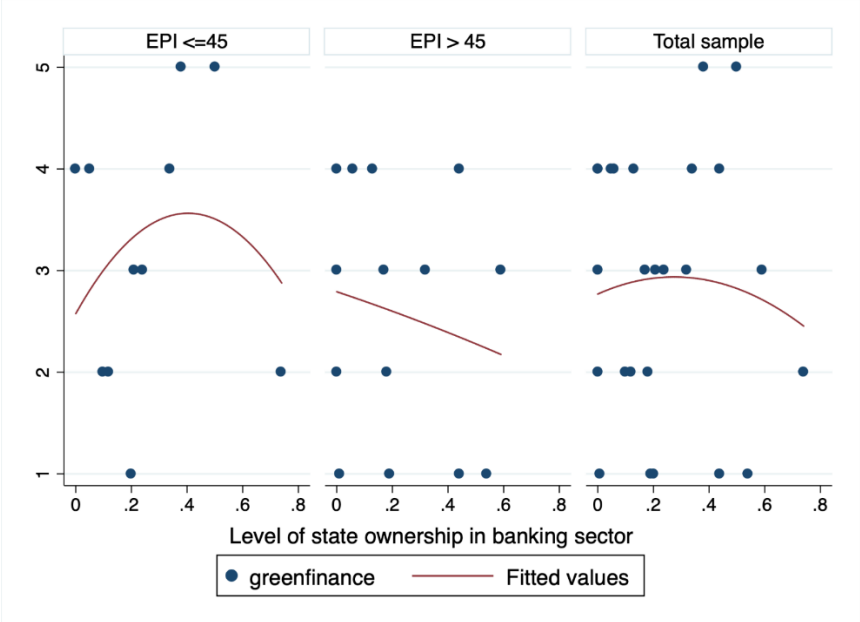
the relationship between countries' progress of green finance and level of state ownership in the banking sector, which was conditioned on Environmental Performance Index (EPI) in 2014. According to Figure 2.3, if the total sample of emerging economies is considered, the countries with a middle level of state ownership in the banking sector tend to have better progress of green finance. This pattern suggests the relationship between the level of state ownership in banking sector and the development of green finance is not linear but reverse-U. Furthermore, if we divided the total sample by EPI, the reverse-U relationship only exists in the group with lower scores in EPI (<=45). In other words, only when countries already encounter serious environmental problems, there is a reverse-U relationship between the level of state ownership in banking sector and the development of green finance. Most notably, China, the typical case of state capitalism, becomes a deviant case. This result suggests that the simple understanding of state capitalism is not enough to explain the complex relationship between state capitalism and development of green finance for the case of China. There are other dimensions of state capitalism or other factors that matter.

Figure 2. 2 Green Finance and State Ownership in Banking Sector



Note: The data of countries' progress of green finance comes from Sustainable Banking Network (2019); the information of level of state ownership in banking sector comes from the World Bank's Bank Regulation and Supervision Survey (BRSS) in 2010. State ownership is defined as the asset share of banks that are more than 50% controlled by the government (Cull et al., 2018).

Figure 2. 3 Green Finance and State Ownership, by EPI



Note: This analysis uses the score of 45 in the EPI index as focal point to separate the emerging economies with poor environmental performance (EPI<=45) from the emerging economies with better environmental performance (EPI>45).

To further explore how state capitalism affects the development of green finance, I turn to the case study of green finance in China. China has been viewed as a typical case or even the leading edge of state capitalism in the early 21st century, which combines both top-down state coordination and bottom-up market competition (Bremmer, 2010; Eaton, 2015; Huang, 2008; Musacchio & Lazzarini, 2014; Naughton & Tsai, 2015). The financial regulatory system exemplifies the critical component of China's state capitalism. Although China's financial system is gradually transforming to a more liberal and market-oriented system over the past decade, the financial sector still has been seen as the "commanding height" of the domestic economy and partially controlled by the Chinese party-state (Bell & Feng, 2013; Collins & Gottwald, 2011, 2014; Gruin, 2019a; Heilmann, 2005; McNally, 2012; Pearson, 2005; Wang, 2015). Some of the financial infrastructures in China, such as securities exchanges, digital credit scoring, or internet lending platforms, are 'designed with control in mind' and organized by state-owned or state-backed organizations (Gruin, 2019b; Gruin & Knaack, 2020; Petry, 2020a, 2020b). The Chinese government also preserves custodianship of macro-social development and pervasive interference in the financial system to prevent bankruptcies, defaults, financial losses, and capital flight (Shih, 2019; Wright et al., 2020).

In particular, the banking system is the cornerstone of China's financial system, and its scale far surpasses the total financing of the bond and stock markets (Sun, 2016). China's financial system is dominated by five big state-own commercial banks[11], which

[11] The big five is owned by the central government, and it includes the Industrial and Commercial Bank of China, the Agriculture Bank of China, the Bank of China, the China Construction Bank, and the Bank of Communication.

accounts for 36.67% of total asset of banking sector in 2019 (Sun, 2020). China also has three state-owned policy banks[12] that follow distinct missions (Sun, 2020). Through state-controlled banking systems, China's financial system could provide financial support for industrial policy and channel low-cost loans to firms privileged by the state (Gruin, 2013; McNally, 2013).

Yet China's state capitalism is not always represented by a unitary government. Even as the strategic sector, China's financial system is governed by fragmented and contested regulatory agencies, which are coordinated by top leadership (Bell & Feng, 2013; Collins & Gottwald, 2011; Hsueh, 2011; Pearson, 2005, 2007, 2011). The fragmented authority sometimes leads to political interference and inconsistent policies, but it has also provided the opportunity for incremental and non-linear change through bargaining dynamics between agents (Kennedy, 2008; Töpfer, 2017). The divergence of Chinese regulators' preferences often results from a longstanding tradeoff: they want to maintain control of key strategic sectors of the economy but also intend to gain credibility by adhering to global standards (Collins & Gottwald, 2014; Heilmann, 2005). Thus, the adoption of global standards would go through complex political filtering processes so as to reconcile the contradicting goals, and sometimes the process leads to flexible, selective, and gradual implementation of global standards (Carney, 2012; Foot & Walter, 2011; Sebastian & Nicole, 2011; Kudrna, 2007; Liu, 2014; Walter, 2008), over-compliance (Knaack, 2017), or even contestation with global standards (Knaack & Gruin, 2020). The abovementioned features of the regulatory

[12] The three policy banks are the China Development Bank (CDB), the Export-Import Bank of China (CEXIM), and the Agriculture Development Bank of China (ADBC).

system in China contribute to the variation in regulatory practice across time and sectors, which could further lead to the variation in banks' and firms' risk-taking behaviors (Yishu et al., 2015; Hachem & Song, 2016).

Taken together, China is a typical case of state capitalism, but it is also a deviant case for the relationship between state capitalism and the development of green finance. As illustrated in Figure 2.3, China is a deviant case which is far above the reverse-U line. It suggests that state ownership alone may be not enough for explaining the dramatic growth of green finance in China. It is also possible that there may be other crucial variables influencing the development of green finance in China. By tracing the case of green finance in China, this chapter not only examines the role of China's state capitalism in the development of green finance but also explore other crucial political factors which make the rapid growth of green finance in China possible.

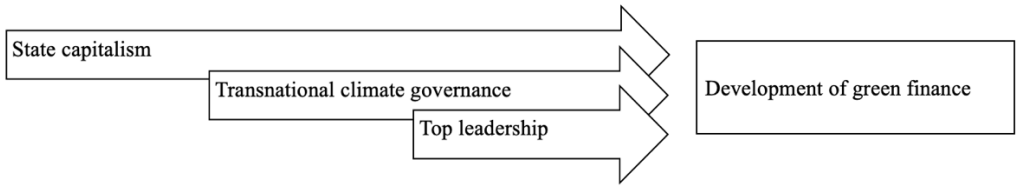
Specifically, this chapter demonstrates that state capitalism is the necessary condition for the rapid development of green finance in China. Among complex features of state capitalism, I particularly focus on the state's role in setting standards earlier before the emergence of market[13] and mobilizing the financial sector and state-owned enterprises to pursue its policy goals. In this view, the critical mechanisms of China's state capitalism are not just the high-level state ownership in the banking sector but the state's active role in setting standards for creating the market and mobilizing state-owned enterprises to participate in the market. Furthermore, this chapter asserts

[13] Many governments, such as Japan or EU countries, set standards for green bond market, but they created standards after the emergence of a green bond market. The governments act after the markets. In China, the government preemptively constructed the domestic standards before the emergence of domestic green bond market. The standards become cores of the state's market creation project rather than supplementary tools to enhance the scale and function of a market.

that state capitalism alone is unable to elevate the reform agenda for green finance. The development of green finance is further advanced by the policy ideas from transnational climate governance, which has played a role in innovating, adapting, and diffusing policies of green finance (Elliott & Zhang, 2019). The political support from top-level leadership on new policy agenda is another critical factor, which provides momentums for regulatory agencies to actively intervene the market.

Taken together, the three layers of political factors are described as Figure 2.4. The layer of state capitalism has a more prolonged impact, but itself is not enough to explain the rapid growth of green finance. Only when other two layers, transnational climate governance and the political support from top-level leadership, are added in the process sequentially and combined with the layer of state capitalism, the aggregated effect of the three layers drive the rapid development of green finance.

Figure 2. 4 Argument of this Chapter



This chapter further argues that state capitalism in China has mixed effects on the development of green finance. On the one hand, China's state capitalism has advantages in speedily developing the market for green finance. The Chinese government was more active to set domestic standards of green finance for market players, which could enhance market practices and avoid the potential instability

caused by global standards. Furthermore, the Chinese government leveraged formal and informal networks to mobilize the financial sector to participate in the market and comply with the governmental standards of green finance.

On the other hand, China's state capitalism is not without limitations for promoting the development of green finance. First, the state capitalist system in China may not avoid fragmentation of preferences among regulatory agencies. Second, since the Chinese government still prioritizes the stability of economy and control of financial sector, China's state capitalism may slow the convergence of domestic and global standards. Finally, although the Chinese government actively intervenes the market of green finance, it has limited ability to create incentives for more market players to participate in the market. In short, this chapter demonstrates a nuance understanding on how state capitalism affects the development of green finance in the context of China, which explains why China is a deviant case.

Green Finance in China

This section traces the development of green finance in China. The process involves two periods. In the first period (1999-2013), the Chinese regulatory agencies narrowly focused on promoting green credit policies in the banking sector. In the second period (2014-now), the policy agenda of green finance has expanded to multiple issue areas. In particular, green bonds are an innovative and popular issue area in this period. By tracing this process, this section shows that state capitalism has been the political factor that strongly influences both periods. In the second period, with existing

state capitalism, transnational climate governance and top-level leadership became more prominent political factors, jointly leading to the rapid growth of green bonds in China.

Early Efforts on Greening China's Banking System (1999-2013)

Beginning in the mid-1980s, the Chinese government started to establish stringent environmental regulations in response to serious environmental problems. Beyond the command and control-based regulations, the Chinese government adopted market-based environmental policies. Since 1995, several regulatory agencies had released policies to integrate environmental protection metrics into banks' lending process. In 1995, the PBoC released the "Circular on Issues concerning Implementing Credit Policies and Strengthening Environmental Protection" (中国人民银行关于贯彻信贷政策与加强环境保护工作有关问题的通知). Also, the original State Environmental Protection Administration (SEPA) issued "Notice on making use of credit policy for promoting environmental protection" (国家环境保护局关于运用信贷政策促进环境保护工作的通知). These policies require financial institutions at all levels to work with environmental agencies and to implement the national environmental protection policy in their lending processes.

China's green credit policy later evolved to a higher-level and inter-agency design. In July 2007, the SEPA, the PBoC, and the CBRC jointly issued the "Opinion on Implementing Policies and Regulations on Environmental Protection to Prevent Credit Risks (Huan Fa [2007] No. 108)" (关于落实环保政策法规防范信贷风险的意见).

This policy demands banks should restrict or withhold loans to "blacklist" companies and projects that do not meet the requirements of environmental regulations, and extend credit to companies and projects favoring energy conservation and emission reduction. Banks are required to establish an internal system and database for environmental risk management. The CBRC further issued two directives[14] to provide guidelines of the green credit policy in more detail.

The 2007 Green Credit Policy provided a general guideline, and more detailed guidelines were presented by the CBRC. In 2012, the CBRC released the "Notice of the CBRC on Issuing the Green Credit Guidelines." (银监会关于印发绿色信贷指引的通知), which provided more specific clarification on green credit. According to the guidelines, green credit shall include (1) support for a green, low-carbon and circular economy, (2) prevention of environmental and social risks, and (3) improvement of their environmental and social performance and other basic contents. Compared to the 2007 Green Credit Policy, the Green Credit Guidelines were closer to the concept of "sustainable banking" and covered issues of disclosure, monitoring and inspection, and punishment (Bal et al., 2014).

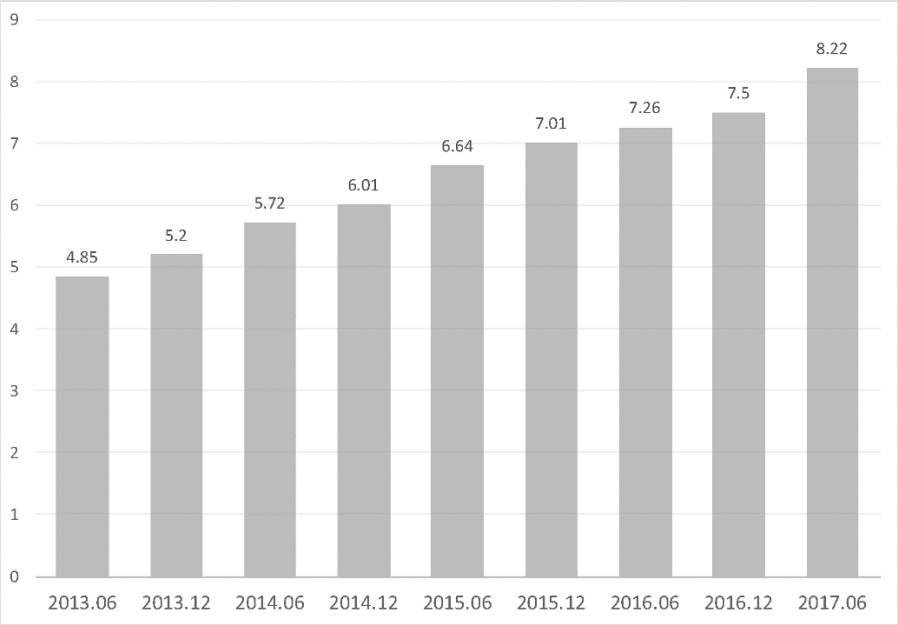
The CBRC further established a statistical system and evaluation system for the Green Credit Guidelines. In 2013, the CBRC introduced "Green Credit Statistics Reporting Template & Guidance on Calculating Environmental Benefits" (关于报送绿色信贷统计表的通知), which provides green loan definitions (12 categories) for

[14] "Notice on Implementing Macro Tightening Policies of the Government to Prevent Credit Risk in High-Energy Consumption and High-Pollution Industries"(关于贯彻落实国家宏观调控政策防范高耗能高污染行业贷款风险的通知) and "Lending Guidelines Aimed at Energy Conservation and Emission Reduction" (银监会对银行业金融机构节能减排授信工作制定指导意见).

financial institutions and asks banks to report green loan information based on the categories provided by the CBRC. In 2015, the CBRC issued Green Credit Key Performance Indicators (绿色信贷实施情况关键评价指标). This document further provided quantitative and qualitative key performance indicators (KPIs) for banks to evaluate themselves. The KPIs are weighed by their importance. The board and executives are the most importance indicator which account for 22%, and this suggests that policy makers hope to incentivize top managers of banks to comply with the policy. Banks need to provide evidence, such as documents, reports, or memo, for the evaluation based on the KPIs. Banks are classified into four tiers according to their evaluation outcomes.

Green credit has continued to be the dominant component of green finance. Until June 2017, the scale of green credit from 21 major banks reached 8.22 trillion RMB, which a 69% increase since June in 2013 (Figure 2.5). The total amount of green credit accounted for over 90% of green finance, which is far beyond the scale of green bonds and other green financial products.

Figure 2. 5 Scale of Green Credit from 21 Major Banks (RMB trillion)



Source: CSRC

Among Chinese banks, studies have found that state-owned banks were the leading actors who lend green credits (Cui et al., 2018; Yin et al., 2020). For example, more than half of green credits were contributed by the "Big Five" state-owned commercial banks (Yin et al., 2020). The banking sector was effectively mobilized by the Chinese government, since the government has political personnel controls on the major banks (Ho, 2018).

Overall, China's state capitalism played a critical role in the first period (1999-2013). To develop a green credit system, the regulatory agencies established the standards and leveraging the state-owned banks to implement the standards. Admittedly, foreign actors also played a role during this process. Particularly, the IFC and other international financial institutions helped regulatory agencies and banks build their capacity to evaluate green credit risk (Ho, 2018). However, compared to the

second period (2014-now), the influence of transnational climate governance was still limited in the first period.

Finally, it is noteworthy to mention that China's state capitalism in this period was not without limitations, though it rapidly mobilized the banking sector to generate more green credits. For instance, some studies suggest the effectiveness of green credit policies was limited (Wang et al., 2019; B. Zhang et al., 2011). In addition, there was no common standard for banks to manage green credits (Jing, 2011). The main barrier in the promotion of green credit policy during this period was that some regulatory agencies and local governments still viewed economic growth as the top priority, leading to insufficient collaboration among relevant government agencies and local protectionism (Aizawa & Yang, 2010; Jin & Mengqi, 2011; Zhang & Li, 2009).

New Momentum of Green Finance (2013-now)

Although state capitalism has been an important condition for the development of China's green credit system since 2007, it alone cannot explain why and how the green credit policy has evolved to a more comprehensive agenda of green finance since 2013. These next-generation green finance policies, such as the policies for green bond, have been described as "green finance 2.0," compared to the earlier green credit policy (Ho, 2018). As discussed below, this chapter argues that there are other prominent factors influencing the development of green finance. In particular, transnational climate governance is a catalyst for the development of green finance.

Admittedly, the smog crisis in January 2013 might have played a role in strengthening top-level leaders' political will to carry out market-based environmental reforms. For instance, in November 2013, the Third Plenum of the 18th CPC Congress emphasized that "efforts must be made to establish a systematic and full-fledged institutional system of ecological civilization for the protection of eco-environment" and "efforts must be made to establish a market-based mechanism that channels private capital investments to the protection of eco-environment"(Green Finance Task Force, 2015). However, although the environmental crisis created a window of opportunity for a sweeping reform, it is not enough to further explain the scope and content of the reform. It was the transnational climate governance that provided innovative and specific policy options for the development of green finance in China.

The Role of Transnational Climate Governance

In response to the policy signal from the top-level leadership, the new momentum of green finance in China came from a coalition of Chinese and global policy entrepreneurs. Since 2013, the International Institute for Sustainable Development (IISD)[15] and the Finance Research Institute of the Development Research Centre, State Council of China (DRC) had collaborated in exploring policy options for greening China's financial system and produced several reports. The CBRC, the CIRC, the CSRC, and the PBoC all participated in this project.

[15] The IISD is a think tank which focuses on sustainable development, and it receives project funding from the Government of Canada, United Nations agencies, foundations and the private sector.

Another critical event was the Eco Forum Global (生态文明贵阳国际论坛)[16], which held on July 10 – 11, 2014, in Guiyang. In the forum, Ma Jun, who was the chief economist at the Research Bureau of the PBOC and received his Ph.D. in Economics from Georgetown University, organized and hosted a panel of green finance. The panel of green finance attracted many foreign participants, such as Simon Zadek, the co-director of the UNEP Inquiry into the Design of a Sustainable Financial System; Sean Kidney, CEO of Climate Bonds Initiative; Susan Burns, founder of the Global Footprint Network; and Mark Halle, vice president of the International Institute for Sustainable Development (IISD).

After the Eco Forum Global, Ma Jun and Simon Zadek decided to create the Green Finance Task Force (GFTF) to draft further systemic policy recommendations. The GFTF was co-sponsored by the Research Bureau of the PBoC and the UNEP Inquiry, financially supported by the UK's Department for International Development. Members of the GFTF included not only experts, but also policy makers, NGOs, and Chinese state-owned firms.[17] The GFTF played a role of an "epistemic community": it defined the problem, encouraged learning and consensus-building, set the agenda, and proposed innovative policy options (Elliott & Zhang, 2019). After several runs of revision, the GFTF released the final report "Establishing China's green financial system" in April 2015. According to GFTF's estimates, the investment need for green

[16] The Eco Forum Global is China's first province-level international forum for environmental issues, starting from 2009.

[17] The major actors include the PICC Group, Industrial and Commercial Bank of China, stock exchanges, the Ecological Finance Research Center at Renmin University of China, Research Center for Climate and Energy Finance at Central University of Finance and Economics, the Green Credit Committee of the China Banking Association, the consultancy Syntao, and experts from the green credit rating, green database and social responsibility sectors. However, the GFTF did not include foreign firms, small and medium enterprises, the NDRC, and the CSRC (Elliott & Zhang, 2019).

economic development is at least 2 trillion yuan (US$320 billion, or more than 3 percent of GDP) for the next five years, and the government is able to contribute around 10 to 15 percent of all green investment (GFTF, 2014). To mobilize more private green investment, the GFTF proposed 14 specific recommendations for building China's green finance system (Table 2.1).

Table 2. 1 Green Finance Task Force's 14 Recommendations

Specialized investment institutions:
1. *Green Banks* – Sponsor the creation of the China Ecological Development Bank and encourage the creation of local green banks.
2. *Green Funds* – Promote the development of green industry funds through public-private partnership arrangements.
3. *Green the Development Banks* – Adopt environmental policies for overseas development institutions.
Fiscal and financial supports:
4. *Discounted Green Loans* – Improve the system for providing discounted interest rates on green loans.
5. Green Bonds – Develop the green bonds market by issuing industry guidelines, permitting and encouraging banks and enterprises to issue green bonds and providing incentives.
6. Green IPO – Improve the mechanism through which environmental performance is communicated and recognized in equity markets.
Financial infrastructure:
7. Carbon Markets – Accelerate the formation of markets for emission trading.
8. Green Ratings – Establish a green rating system to bring down the financing costs for green enterprises and projects.
9. Green Stock Indices – Promote the creation and use of green stock indices that orient the capital market to green industry.
10. Environmental Cost Analysis – Create a public nonprofit environmental cost analysis system and database.
11. Green Investor Network – Create a green investor network to foster the expertise and capabilities of institutional investors in investing in green industries.
Legal infrastructure:
12. Green Insurance – Implement compulsory green insurance for key industries.
13. Lender Liability – Identify and clarify environmental liabilities of banks.
14. Compulsory Disclosure – Establish mandatory environmental disclosure requirements for listed companies.

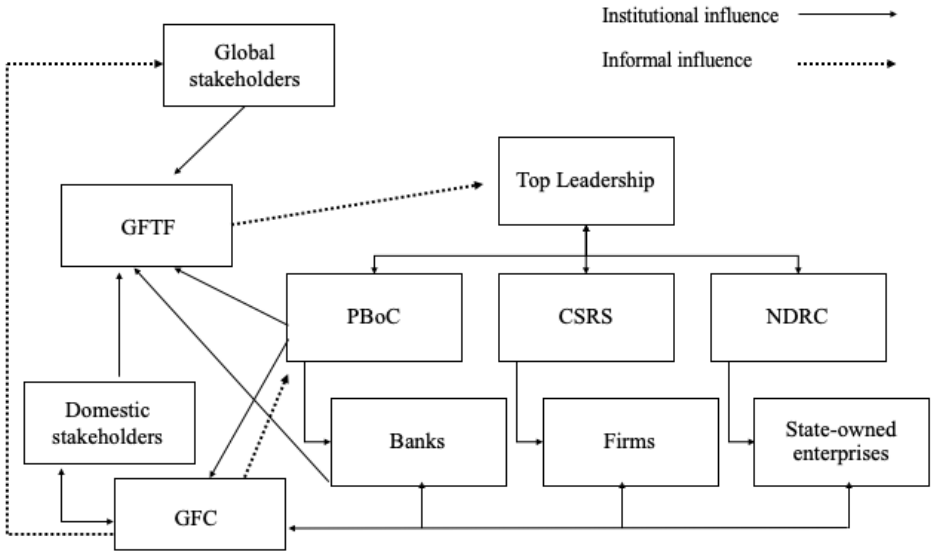
Source: GFTF (2014)

Beyond the international collaboration through the Green Finance Task Force, Ma Jun also organized a domestic academic group, the Green Finance Committee (GFC) of the China Society of Finance and Banking (中国金融学会绿色金融专业委员会), to advocate green finance in China. The GFC was established in April 2015, and its initial 85 members came from all major banks, large and medium-sized funds, insurance and securities companies (HKGFA, 2019).

The GFC soon became the major domestic group of policy entrepreneurs, promoting collaboration, innovation and capacity-building for the development of green finance. First, the GFC had published several academic reports related to green finance and spread daily news and articles through social media, which set up the agenda and norms for green finance. Second, the GFC actively participated in the policy-making process. In December 2015, the GFC developed the first Chinese taxonomy of green bond, Green Bond Endorsed Project Catalogue (绿色债券支持项目目录), and this catalogue was later adopted by the PBOC, the CSRC, and the NAFMII as green bond definitions. The GFC also provided professional opinions for regulatory agencies, local governments, and local financial institutions to explore best practices for green finance. Finally, the GFC actively facilitated international collaboration. Members of the GFC had involved in the G20 Green Finance Study Group, Network for Greening the Financial System (NGFS), and UNEP FI. The GFC also launched bilateral initiatives, such as UK-China Green Finance Taskforce, and published the report "The Need for a Common Language in Green Finance" with the EIB.

In brief, the GFTF and the GFC were two critical organizations that institutionally and informally bridged transnational climate governance, domestic regulatory agencies, and domestic firms (Figure 2.6). These networks effectively shaped and spread the new policy agenda of green finance.

Figure 2. 6 The Role of GFTF and GFC



Top-level leadership

The government has identified several regulatory agencies to formulate financial policies related to environmental protection. For instance, the [2014] No. 69 Document of the State Council General Office stated that "the People's Bank of China, the China Banking Regulatory Commission, the China Securities Regulatory Commission, and the China Insurance Regulatory Commission should work together with the government agencies to formulate financial policies that support the development of environmental service industry" (State Council General Office, 2014).

In 2015, the term “green finance” started to appear in the top-level design, suggesting that the top leadership supported the new-generation green finance agenda. According to Ma Jun, the GFTF submitted its 14 policy recommendations to the top leadership in early 2015, and the policy recommendations had been recognized by the Office of the Leading Group on Finance and Economic Affairs of the CPC Central Committee, becoming the foundation for later policy plan (International Finance, 2018). In September 2015, the Central Party Committee and the State Council further issued “Overall Plan for the Structural Reform for Ecological Civilization” (Zhongfa [2015] No.25) (生态文明体制改革总体方案). In this document, “establishing China’s green finance system” was identified for the first time as a part of the structural reform (State Council & CPC Central Committee, 2015).

In 2015, governmental agencies also became active in promoting the development of a green bond market. Under the leadership of Ma Jun, the PBoC became not only one of the most active regulatory agencies for green finance but also a follower of the GFTF’s recommendations. On December 22, 2015, the PBoC released the “People’s Bank of China Announcement No.39”(关于发行绿色金融债券有关事宜的公告) to introduce green financial bonds in the inter-bank bond market. This announcement required green projects to refer to the definition in the Green Bond Endorsed Project Catalogue, which was developed by the GFTF. In addition, the announcement outlines verification requirements, reporting of the use of proceeds, and incentives for green bond issuances. Almost at the same time, the National Development and Reform Commission (NDRC) also published Guidance on Green Bond Issuance which outlines eligible use of proceeds, and requirements of green bond issuance for enterprise bonds.

During 2016, the idea of green finance became more and more specific in the top-level policy priorities. In March 2016, the Thirteenth Five-Year Plan for Economic and Social Development mentioned green finance for the first time, and it clearly listed green credit, green bond, and green development fund as the main tasks for establishing a green financial system. On August 31, 2016, "Guidelines for Establishing the Green Financial System" (关于构建绿色金融体系的指导意见) was jointly released by seven ministries and commissions such as the PBoC, the Ministry of Finance, and the NDRC. The Guidelines included most of the 14 recommendations proposed by the GFTF, though some recommendations, such as green bank, were not mentioned by the guideline[18]. This document covered 35 articles which outline the definition of green finance, the definition of green finance system, the purpose of China's green finance system, and policy areas.

The Guidelines first defined "green finance" as "financial services provided for economic activities that support environment improvement, climate change mitigation and more efficient resource utilization. These economic activities include the financing, operation and risk management for projects in areas such as environmental protection, energy savings, clean energy, green transportation, and green buildings"(PBOC et al., 2016). Based on this definition, the Guidelines then defined "green financial system" as "institutional arrangement that utilizes financial instruments such as green credit, green bonds, green stock indices and related products, green development funds, green insurance, and carbon finance, as well as relevant policy incentives to support the green

[18] Main policymakers thought the idea of green bank is too difficult to be implemented (Interview with expert at IIGF, CUFE, Beijing, 08/15/2019).

transformation of the economy" (PBOC et al., 2016). Main policy goals of the Guidelines included:

1. Vigorously Develop Green Lending.
2. Enhance the Role of the Securities Market in Supporting Green Investment.
3. Launch Green Development Funds and Mobilize Social Capital through Public and Private Partnerships (PPP).
4. Develop Green Insurance.
5. Improve Environmental Rights Trading Market and Develop Related Financing Instruments.
6. Support Local Government Initiatives to Develop Green Finance.
7. Promote International Cooperation in Green Finance.
8. Prevent Financial Risks and Strengthen Implementation.

In May 2017, the Standardization Administration of China (SAC) jointly with the PBoC, and other three agencies issued "Plan for the Development of the Standardization System for Finance (2016-2020)"(金融业标准化体系建设发展规划（2016-2020 年）) , which emphasized standardization of green finance as one of the main tasks. The China Finance Standardization Technical Committee (SAC/TC180)[19] agreed that the Research Bureau of the PBoC leads a green finance standardization working group (SAC/TC180/WG8). The SAC/TC180/WG8 especially focuses on

[19] The SAC authorizes the SAC/TC180 as the main technical organization for constructing nationwide standards in the financial sector.

catalogue of green bond, rating standards of green bond, Green finance terminology, and actively followed and participated in the development of ISO/TC322 (sustainable finance).

In the local level, local governments have started to issue green bonds through local government financial vehicle (LGFV)[20] since 2016. The amount of LGFV green bonds have grown by four times between 2016 and 2019, reaching USD17.5bn (Meng et al., 2020). The provinces with the largest cumulative volume are Guangdong (USD4bn/RMB27bn), Anhui Province (USD3.2bn/RMB21.5bn), and Shandong Province (USD3.1bn/RMB21.3bn) (Meng et al., 2020). In June 2017, five provinces, including Guangdong, Guizhou, Jiangxi, Zhejiang and Xinjiang, were approved by the State Council to become green finance innovation pilot zones; and the Gansu province was added in 2018. Until 2019, provincial and sub-provincial governments has introduced more than 500 policies related to green finance, including more than 300 measures to promote the development of green finance (Shao et al., 2020).

Table 2. 2 Major Policy Documents of Green Finance in China

Time	Agency	Document
2012.1	CSRC	Notice of the CBRC on Issuing the Green Credit Guidelines 《银监会关于印发绿色信贷指引的通知》
2013.1	MEP and CIRC	Guidelines for the Pilot Projects of Compulsory Environmental Pollution Liability Insurance 《关于开展环境污染强制责任保险试点工作的指导意见》
2013.7	CSRC	Green Credit Statistics Reporting Template & Guidance on Calculating Environmental Benefits 《关于报送绿色信贷统计表的通知》

[20] The CBI defines LGFV as "financing firms established and owned by the local government in order to finance the investment and construction of public projects"(Meng et al., 2020). Since 2014, the new Budget Law of People's Republic of China accelerated LGFV debt issuance. The most common type of instrument used by LGFVs are 'Enterprise bonds,' which are overseen by the NDRC.

2014.6	CSRC	Green Credit Key Performance Indicators 《绿色信贷实施情况关键评价指标》
2015.9	CPCCC and the State Council	Overall Plan for the Structural Reform for Ecological Civilization" (《生态文明体制改革总体方案》
2015.12	PBoC	People's Bank of China Announcement No.39 《关于发行绿色金融债券有关事宜的公告》
2015.12	NDRC	Guidance on Green Bond Issuance 《绿色债券发行指引》
2016.3	NPC	The 13th Five Year Plan 《"十三五"规划纲要》
2016.3	SSE	Notice on Launching the Pilot Program of Green Corporate Bonds 《上海证券交易所关于开展绿色公司债券试点的通知》
2016.4	SZSE	Notice on Launching the Pilot Program of Green Corporate Bonds 《深圳证券交易所关于开展绿色公司债券业务试点的通知》
2016.8	7 agencies*	Guidelines for Establishing the Green Financial System 《关于构建绿色金融体系的指导意见》
2017.3	NAFMI	Guidelines on Green Debt Financing Instruments of Non-Financial Enterprises 《非金融企业绿色债务融资工具业务指引》
2017.3	CSRC	Guiding Opinions of the China Securities Regulatory Commission on Supporting the Development of Green Bonds 《中国证监会关于支持绿色债券发展的指导意见》
2017.5	5 agencies**	Plan for the Development of the Standardization System for Finance (2016-2020) 《金融业标准化体系建设发展规划（2016-2020 年）》
2017.5	GFC	Guidance on Promoting Green Belt and Road 《关于推进绿色"一带一路"建设的指导意见》
2017.6	MEP and CSRC	Cooperation Agreement on Environmental Information Disclosure for Listed Companies 《关于共同开展上市公司环境信息披露工作的合作协议》
2017.9	7 organizations***	Environmental Risk Management Initiative for China's Overseas Investment 《中国对外投资环境风险管理倡议》
2017.12	PBoC and CSRC	Guidelines on the Evaluation and Certification of Green Bonds (Interim) 《绿色债券评估认证行为指引（暂行）》
2018.3	PBoC	A circular on strengthening the supervision of green bonds issued by financial institutions 《关于加强绿色金融债券存续期监督管理有关事宜的通知》
2018.6	PBoC	Notice on Launching the Evaluation of Green Credit Performance of Deposit-Type Financial Institutions in the Banking Industry 《关于开展银行业存款类金融机构绿色信贷业绩评价的通知》
2018.9	CSRC	Guidelines for Corporate Governance of Listed Companies (Revised) 《上市公司治理准则》
2018.11		The Green Investment Principle (GIP) for the Belt and Road Initiative 《"一带一路"绿色投资原则》
2018.11	AMAC	Green Investment Guidelines 《绿色投资指引（试行）》

2018.12	9 agencies****	Action Plan for the Establishment of Market-oriented and pluralistic Ecological Protection Compensation Mechanism 《建立市场化、多元化生态保护补偿机制行动计划》
2019.3	7 agencies*	Green Industry Guiding Catalogue (2019). 《绿色产业指导目录（2019 年版）》
2019.5	PBoC	Notice to support nonfinancial enterprises in the five green finance pilot zones 《关于支持绿色金融改革创新试验区发行绿色债务融资工具的通知》
2020.5	PBoC, NDRC, and CSRC	Green Bond Endorsed Project Catalogue (2020 Edition) (Consultation Version) 《关于印发〈绿色债券支持项目目录（ 2020 年版）〉的通知（征求意见稿）》
2020.10	5 agencies *****	The Guiding Opinions on Promoting Climate Change Financing 《关于促进应对气候变化投融资的指导意见》
2021.3	NAFMI	《关于明确碳中和债相关机制的通知》
2021.4	PBoC, NDRC, and CSRC	Green Bond Endorsed Project Catalogue (2021 Edition) 《关于印发〈绿色债券支持项目目录（ 2021 年版）〉的通知
2021.5	PBoC	Banking Sector Financial Institution Green Finance Assessment Plan 《银行业金融机构绿色金融评价方案》

Source: Compiled by the author

Note:

* The PBoC, the Ministry of Finance, the NDRC, the Ministry of Environmental Protection (now Ministry of Ecology and Environment), the CSRC, the China Banking Regulatory Commission and the China Insurance Regulatory Commission (now collectively known as China Banking and Insurance Regulatory Commission)

** The Standardization Administration, the PBoC, the CSRC, the China Banking Regulatory Commission, and the China Insurance Regulatory Commission.

*** Green Finance Committee (GFC) of China Society for Finance and Banking, Investment Association of China (IAC), China Banking Association (CBA), Asset Management Association of China (AMAC), Insurance Asset Management Association of China (IAMAC), China Trustee Association (CTA), and Foreign Economic Cooperation Office (FECO) of Ministry of Environment Protection

****The NDRC, the Ministry of Finance, the Ministry of Natural Resources, the Ministry of Ecology and Environment, the Ministry of Water Resources, the Ministry of Agriculture and Rural Affairs, the PBoC, the State Administration for Market Regulation, and the State Forestry and Grassland Administration.

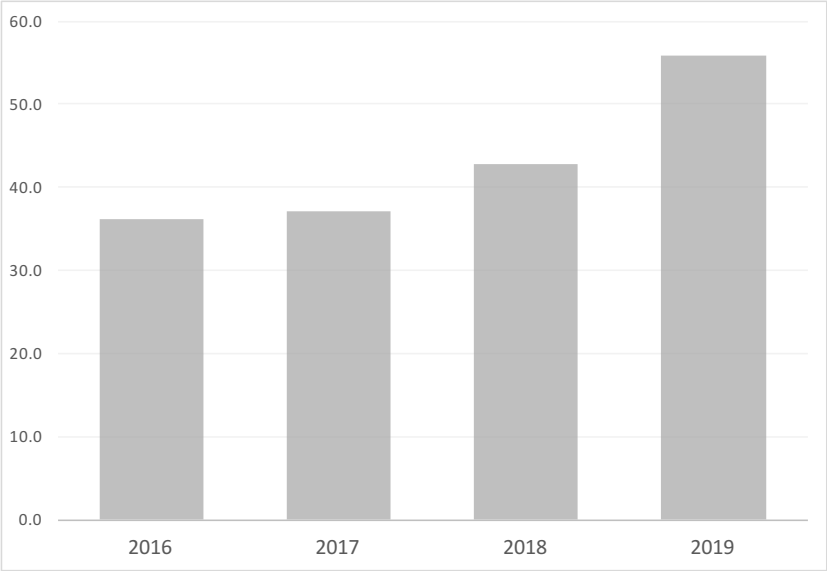
***** The Ministry of Ecology and Environment, the NDRC, the PBoC, the China Banking and Insurance Regulatory Commission, and the CSRC.

The role of state capitalism

With new momentum from transnational climate governance and the top leadership, the development of green finance in China was escalated by existing state capitalism. Under the mobilization of China's state capitalism, the status of green finance has been improved rapidly. One of the most noticeable achievements is growing a green bond market from nothing to the second largest green bond markets in the world within one year. According to the CBI's estimation, the total amount of

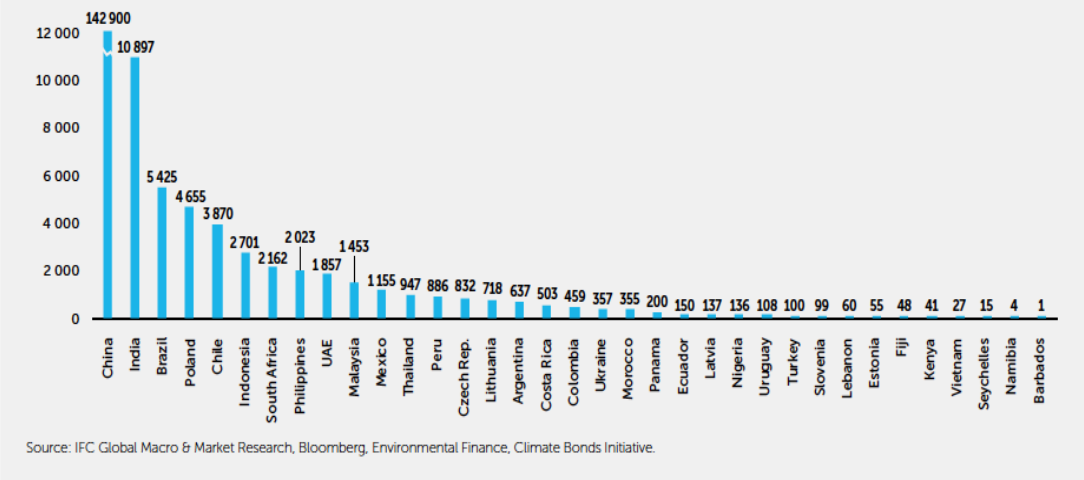
Chinese green bonds issued in the onshore and offshore market reached USD55.8bn in 2019, representing a 54% increase from the USD36bn achieved in 2016 (Figure 2.7). Compared with other emerging economies, China has become a pioneer with the largest amount of green bond issuance (Figure 2.8).

Figure 2. 7 China's Labelled Green Bond Issuance, 2016-2019 (USD billion)



Source: CBI

Figure 2. 8 Cumulative Green Bond Issuance, 2012-19 (USD million)



Source: IFC (2019)

Among green bond market participants, the banking sector and state-owned enterprises were the most crucial actors. According to 2016 Chinese Banker Survey conducted by PWC and China Banking Association, 97% of bankers believed green finance will become a critical part of bank's business (Chinese Banker Survey Report, 2017). As the starting year of 2016, the explosive growth of green bond issuance was mainly driven by Pudong Development Bank, Industrial Bank, and Bank of Communications, which accounted for 84% of the total value of the labelled green bonds issued (Zhang, 2019). Financial corporates were the largest issuer group between 2016 and 2018. Also, most of the offshore green bonds between 2015 and 2017 were issued by state-owned enterprises (Table 2.3).

Table 2. 3 List of Chinese Labelled Green Bonds Offshore, 2015-2017

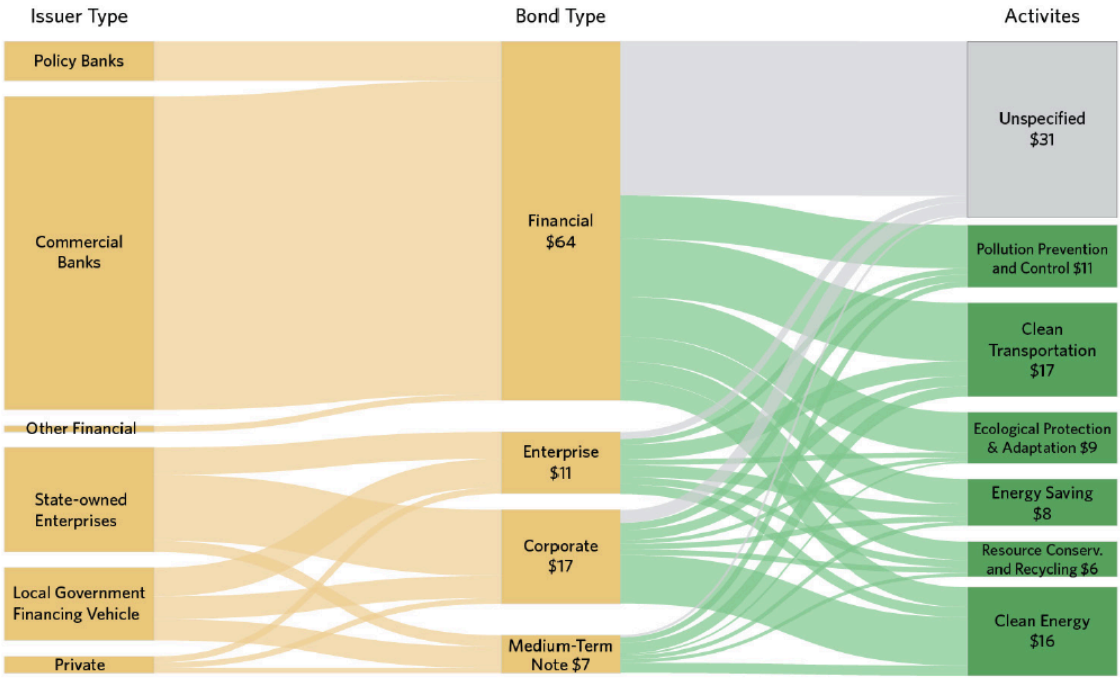
Issuer	Month of issuance	Amount (US$ million)	Jurisdiction of issuance
Agricultural Bank of China	December 2015	994	UK
London Taxi Company (Geely)	May 2016	400	Singapore
Xinjiang Golden wind	May 2016	152	Hong Kong, China
Bank of China	July 2016	3030	Luxembourg and the US
Bank of China	November 2016	500	UK
Three Gorge Corporation	June 2017	725.9	Ireland
Industrial and Commercial Bank of China	October 2017	2150	Luxembourg
China Development Bank	November 2017	1620	Hong Kong and Germany
Bank of China	November 2017	1450	France

Source: CBI; Zhang (2019)

According to Climate Policy Initiative's (CPI) estimation (Figure 2.9), the banking sector, including commercial banks and three policy banks, were the largest

group of green bond issuers, which accounted for 65% of all issuances amount; state-owned enterprises and corporates made up 32% of all issuances amount; and private non-bank issuers only accounted for 3% of the market. This composition of actors demonstrates that the banking sector and state-own enterprises were the government's main leverage for promoting the green bond market.

Figure 2. 9 Allocation of Proceeds (2016- April 2019)



Source: Escalante et al. (2020)

The PBoC has played a prominent role in providing incentives for the banking sector to pursue green finance. Since 2018, the PBoC has launched plans to include banks' green credit performance in the macro-prudential assessment (MPA)[21] and included Green bonds acceptable collateral for medium-term lending facility (MLF).

[21] When banks provide more green credits or issue more green bonds, they could get a higher score and be rewarded by lower interest rate of deposit reserve.

In May 2021, the PBoC has further issued "Banking Sector Financial Institution Green Finance Assessment Plan" (银行业金融机构绿色金融评价方案), which listed quantitative and qualitative indicators to evaluate 24 major banks' performance on green finance. The result of evaluation will be included in the PBoC's rating on financial institutions. If a bank received a poor rating by the PBoC, the bank's expansion plans or business accesses could be constrained by the PBoC's various policy tools (21st Century Business Herald, 2021).

Comparison with Other Countries

We can trace China's development path of green finance more clearly by comparing it with other countries with large green bond markets. By briefly comparing the case of green bond market in China with the cases of India and Japan, we can further identify the unique features of green finance in China. Although regulatory agencies in these three countries all intervened the green bond market, their market intervention have different features (Table 2.4).

Table 2. 4 Comparison of Green Bond Market Development

	China	India	Japan
Regulators	PBoC NDRC	SEBI RBI	MOE
Policy tools	Guideline Internal rating	Guideline	Guideline Subsidies Information platform
Sequence	Regulators act before the market emergence	Regulators acts after the market emergence	Regulator acts after the market emergence
Initial issuers	State-owned enterprises	Private companies	Development bank Private financial corporates

First, India has some similar features to China's model. India's financial system is dominated by public sectors banks (Chatterjee & Chandra, 2020; Cull et al., 2018), and its policymakers also have connections with transnational climate governance, such as UN Inquiry. The performance outcome is that India has the second-largest green bond market among 35 emerging markets, only after China (IFC, 2019). However, if more comprehensive indicators are included, India's development of green finance is far slower than China's progress (IFC, 2019; Sustainable Banking Network, 2019). One crucial difference is that India's regulatory agencies were not preemptively involved in the development of green finance. For example, the initial green bond issuers in India were private companies, and then Indian regulatory agencies constructed guidelines and mobilized state-owned entities after the emergence of the green bond market. Another important difference is that Reserve Bank of India (RBI), the central bank in India, is not as active as the PBoC. The RBI did not actively promote

green finance through the internal rating on banks, which is the strategy used by the PBoC.

In addition, transnational climate governance has weaker influences in India. For instance, Indian financial regulators did not participate in Network for Greening the Financial System (NGFS), and few financial institutions joined in global initiatives, such as Responsible Investment (PRI) (Jena & Purkayastha, 2020). In brief, the case of India basically suggests state capitalism and transnational climate governance could foster the development of green finance. However, China has a faster development of green finance than India because state capitalism and transnational climate governance are relatively stronger in China.

Second, the case of Japan can further demonstrate the unique features of China's model. Japan is the third-largest green bond market in the world, only after the U.S. and China. Like China, the Japanese regulatory agency was embedded in transnational climate governance and actively developed policies to foster the green bond market. However, unlike China, the primary regulatory agency of green bonds is the Ministry of the Environment (MOE) rather than financial regulatory agencies[22]; thus, the MOE does not have internal leverages, such as internal rating, on financial institutions. Similar to China, the MOE's major policy tool is issuing the guideline for market. After completing public consultation and the discussion with European and

[22]Although the MOE is the initial regulator on sustainable finance, there are more regulatory agencies start to involve in this issue area. Since 2018, the Financial Services Agency (FSA), the Ministry of Economy, Trade and Industry (METI) and the MOE have actively promoted disclosure and ESG investing. The Bank of Japan (BoJ), the central bank in Japan, joined in the NGFS in November 2019. In July 2021, the BoJ has become more active in promoting green finance through introducing no-interest loans and purchasing green bonds. Also, the FSA, the METI, and the MOE jointly released guidelines on climate transition finance in May 2021.

U.S. market participants, the MOE published the Green Bond Guidelines in March 2017, and the guideline was purposely aligned with the GBP in order to attract international investment on Japanese green bonds (Kawabata, 2020).

Although regulatory agencies in China and Japan actively intervened the market, there are some differences between the roles of regulatory agencies. One difference is that the MOE established the "Financial Support Programme for Green Bond Issuance" in 2018, and this program provides green bond issuers subsidies for the costs of external review or consultation on designing a Green Bond framework. In China, the subsidies for green bonds issuance are only provided by some local governments rather than central regulatory agencies. The other difference is that the MOE constructed a website, Green Bond Issuance Promotion Platform, in 2018, which provides the public information on market status, policies, and models of green bond issuance. In China, the regulatory agencies do not provide official information platforms for green finance, but only the CFC actively plays the role of circulating public information.

Most importantly, the green bond market in Japan was initiated by development banks and private financial corporates. Japan's first green bond was issued by the Development Bank of Japan in October 2014. In October 2015, the Sumitomo Mitsui Banking Corporation, a private company, also issued a domestic green bond. In 2016, more private companies issued green bonds, including Mitsubishi UFJ Financial Group, Inc., JAG Energy Co., Ltd, and Nomura Research Institute, Ltd., and Canadian Solar Japan K.K. In other words, Japanese regulatory agency played a role of nurturing the green bond market, intervening the market after its emergence. Government-backed entities in Japan, such as Japan Housing Finance Agency and Japan Railway

Construction, Transport and Technology Agency (JRTT), started to lead the market after 2019 (Giorgi & Michetti, 2021), which is later than the private companies. In contrast, Chinese regulatory agencies are more like the creator of green bond market, and state-owned companies are the leading participants since the birth of the market.

Limitations of China's State Capitalism

Although Chinese state capitalism can stimulate the development of green finance, it has some apparent limitations. First of all, the fragmented bureaucracy in China's state capitalism has generated multiple green taxonomies which are not consistent with each other. For example, the eligibility of projects in the CSRC's green taxonomy for green credit is not consistent with the PBoC's green taxonomy for green bond. The CSRC's Green Credit Guidelines has 12 categories while the PBoC's Green Bond Endorsed Project Catalogue includes 6 categories and 31 sub- categories. Some projects which meet the CSRC's Green Credit Guidelines are not eligible for the PBoC's Green Bond Endorsed Project Catalogue and vice versa. Moreover, even for the issue of green bond, the PBoC's green taxonomy is not aligned with NDRC's green taxonomy. For example, nuclear energy is eligible as green projects in the NDRC's green taxonomy, but it isn't in the PBoC's green taxonomy. The requirements for monitoring, reporting, and verification (MRV) also vary across China's regulatory agencies of green bond market (Table 2 in Chapter 4), leading to various reporting quality (Escalante et al., 2020a).

Due to the fragmented bureaucracy, the products of green finance still suffer the problem of greenwashing. For example, after the government announced the goal of achieving carbon neutrality by 2060, many companies started to label green bonds with the buzzword "carbon neutrality," which accounted for around 46% of green bonds issued in the first half of 2021 (Liu & Qiao, 2021). However, the regulatory agencies do not have consistent guidelines on "carbon neutral" bonds yet; "carbon neutrality" has already become a label that is misused (Yao & Wu, 2021).

Second, since China's state capitalism still emphasizes the stability of the financial system and economy, it does not fully promote convergence of domestic standards and global standards. For example, the GFTF proposed overseas investment and development institutions should adopt internationally consistent standards (such as Equator Principles) in its 14 recommendations, but this recommendation did not appear in "Guidelines for Establishing the Green Financial System." Instead, the guidelines only encouraged international cooperation under the framework of the G20 and regional cooperation through 'the One Belt One Road,' Shanghai Cooperation Organization, China-ASEAN Cooperation, South-South Cooperation, the Asian Infrastructure Investment Bank, and BRICs New Development Bank (PBOC et al., 2016). In addition, the guidelines had a specific article about effectively controlling the default risks of green loans and green bonds, preventing excessive leverage by green projects, and preventing systematic financial risks (PBOC et al., 2016).

According to some Chinese experts' opinions, although Chen Yulu, deputy governor of the PBoC, publicly encouraged the common language between Chinese standards and global standards, China can only seek to understand and recognize the

difference and similarity between Chinese standards and global standards at best. Since the emerging green bond market in China still needs to include more market participants and allow their experiments, adopting strict global standards will discourage the expansion of green bond market[23].

In fact, due to the strict regulation on the bond market[24], foreign participation only accounted for around 1.6% of the total value of bonds outstanding in the domestic Chinese bond market, and most of the Chinese green bonds have almost been held by domestic investors, particularly banking sector (Escalante et al., 2020b); only around 1% of Chinese onshore green bond was held by foreign investors (Meng et al., 2020). In other words, the strict financial regulations undermine the influence of foreign investors on the convergence of Chinese standards and global standards.

Admittedly, the Chinese government has started to harmonize different standards of green bonds. For example, in March 2019, the NDRC and other six agencies jointly released "Green Industry Guiding Catalogue (2019)" (绿色产业指导目录（2019年版）). This catalogue unifies domestic definition and classification of green assets and green activities, but this newest green taxonomy still includes clean coal production, coal efficiency and coal plant retrofits.

In 2020, the PBoC, the NDRC, and the CSRC further proposed "Green Bond Endorsed Project Catalogue (2020 Edition) (Consultation Version), which plans to

[23] Interview with expert at IIGF, CUFE, Beijing, 07/22/2019; Interview with expert at IIGF, CUFE, Beijing, 08/08/2019

[24] The government is trying to improve the access to domestic financial markets for foreign investors. For instance, the government has reformed the Qualified Foreign Institutional Investor (QFII) system and established renminbi (RMB) equivalent of the QFII program, the RQFII scheme, in 2011. Also, the Bond Connect (债券通) was introduced in 2017. In 2019, the Chinese government remove quotas of QFII and RQFII to attract more foreign investments.

remove the clean utilization of coal from the green bond catalogue. The consultation version finally became the formal version in April 2021. However, even though regulatory agencies can successfully harmonize the use of proceeds classifications, China's green bond standards still diverge on other aspects, such as allocation of proceeds and reporting requirements (Table 4.3 in Chapter 4).

Finally, even though the government actively mobilized market participants, certain market players still lack strong incentives to pursue the goals of green finance. To mobilize marker players, some local and municipal governments have provided financial supports, such as interest and cash subsidies, specialized guarantees, credit-increasing mechanism for green bond issuance, and financial discounts for green credit. However, most of these policies target large and higher-rated green projects, and small- and medium-sized green projects still lack policy support (Shao et al., 2020).

Most critically, green finance might still not appeal to investors in China. Based on green bonds issued by list companies in China's stock market between 2016 and 2019, one study found that green bonds did not have significant effects on the stock yields of the issuing companies (Zhu et al., 2020). This finding suggests investors in China's stock market might not prefer green projects. Also, China's institutional investors lack incentives of ESG investing. According to a survey conducted by the Asset Management Association of China (AMAC) in 2019, 71% of 324 Chinese institutional investors still adopt a wait-and-see approach for ESG/Green investment (AMAC, 2020). Chinese investors still prioritize the indicator of return on investment (ROI), and some even insist that ROI should not be lower than 8% (Zhang, 2021). Therefore, most of Chinese green bonds so far are held by banking institutions rather

than Chinese institutional investors (Shao et al., 2020). In addition, the public still has not realized the importance of green finance. Green finance is viewed as an elite-oriented issue and hard to receive feedback from ordinary people.[25] Even in the universities, few students in departments of finance are familiar with the issue of green finance[26].

In addition, the effect of China's state capitalism varies across issue areas of green finance. Without the strong leverage of financial sector, the development of green fund, green insurance, and carbon trading market are relatively slow, compared with green credit and green bond systems (Zhang, 2021). There are around 250 green funds in China, but their scale is small and only a very small proportion of regular funds. Green insurance in China is still limited to compulsory environmental pollution liability insurance, and the insurance market does not have other innovative products. Although the carbon trading market in China is growing, the total size of Chinese ETS pilots in 2019 was still smaller than 1% of global carbon market value. In short, China's state capitalism is unable to generate the fast growth in all issue areas of green finance.

Although China's state capitalism actively promotes the growth of green finance in general, it did not adopt all policy options that enhance growth. In some cases, China's state capitalism has still prioritized financial stability over rapid growth of green finance. For instance, to provide more opportunities of green investments for institutional investors, one possible option is to securitize green credits, which is usually called green credit asset-backed securities (ABS). However, since the 2008

[25] Interview with expert at Green Peace, Beijing, 08/16/2019; Interview with expert at IIGF, CUFE, Beijing, 08/16/2019

[26] Interview with expert at IIGF, CUFE, Beijing, 08/19/2019.

financial crisis, the PBoC and CBRC have continued to require banks shall hold at least 5% of the lowest grade asset-backed securities in each asset securitization initiated. Although the requirement of risk retention is designed to prevent systematic financial risks, it largely discourages banks to pursue the securitization of green credit.

Overall, Chinese state capitalism alone cannot mobilize enough resources to meet the domestic demand of green finance. According to SBN Progression Matrix in 2019, China got the lowest score in the indicator of incentive, which is below the average of Asia and the average of SBN members (Sustainable Banking Network 2019). The China Green Finance Progress in 2019 shows that the green financial demand in 2018 is 2.1 trillion RMB, but the financial supply is only 1.3 trillion RMB (Jiang, 2019). The supply of green finance in China is still far below the demand.

Conclusion

This chapter attempts to explain why green finance developed rapidly in China. By tracing the dynamics of institutional development, this chapter argues that the development of green finance in China gained new momentum from transnational climate governance and the top leadership. China's state capitalism also played a role in constructing standards to create domestic green bond market and mobilizing the banking sector and state-owned enterprises as primary market participants.

In summary, the development of green finance in China started from 1999. The major development during this early period was to establish an institution of green credit which mainly relied on the banking sector. Since 2013, a coalition of Chinese

and global policy entrepreneurs has upgraded the policy agenda of green finance, and the coalition's policy proposals were supported by the top leadership. The development of green finance in China was also accelerated by existing state capitalism. The regulatory agencies designed domestic standards for green finance; state-owned banks and enterprises were the active followers, creating the market for green bond quickly. In short, for the case of China, the main driving forces of the development of green finance are transnational climate governance, top leadership, and state capitalism.

Although state capitalism can foster the development of green finance to some extent, state capitalism in China has some limitations in effectively developing institutions of green finance. First, it is constrained by the fragmented bureaucracy, leading to inconsistent standards for green bonds. Also, the state capitalism does not encourage full harmonization between domestic standards and global standards. Chapter 4 will provide more details on this point. Finally, beyond the banking system, state capitalism has limits on mobilizing more market actors to invest and innovate green financial products.

One of the limitations of this chapter is that it did not systematically discuss alternative explanations. Some might argue that China actively promotes green finance due to the need for domestic legitimacy or US-China competition. However, this research found little evidence directly supports these explanations, though indirect or implicit evidence might be ignored by this study. Because China and the United States have co-chair the G20 sustainable finance working group since 2021, future studies can evaluate whether the US-China relations start to affect the domestic development of green finance in China. In addition, I did find some evidence suggests Chinese

policymakers hope that green finance can become China's soft power and enhance China's international status and reputation, but it is not clear how this wish fostered the development of green finance. Future researches could further explore how the search for China's international status and reputation affects market participants' behaviors and attitudes toward green finance.

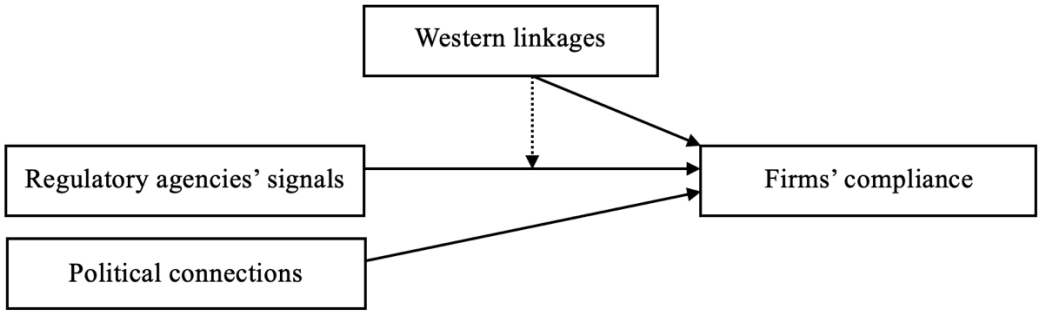
Chapter 3: A Firm-level Framework

Introduction

This chapter intends to explain why some Chinese green bond issuers comply with the standard established by the Climate Bond Initiative while others do not. The scholarship on transnational climate governance does not provide an adequate theoretical framework to understand either why Chinese green bond issuers have different compliance outcomes despite being under similar institutional pressures or why the same Chinese green bond issuers may have different compliance outcomes with global voluntary environmental standards at different times. To fill this gap, this chapter will develop a firm-level framework to explicate the puzzle of green bonds in China.

The framework is based on general assumptions and elements from institutional theory and then extends the framework to emerging economies. The framework conceives of firms in emerging economies as rational and relational actors positioned in networks of stakeholders. The model proposes that regulatory agencies, political connections, and Western linkages are primary drivers of local firms' compliance with global voluntary environmental standards. Contrasting with the institutional theory, however, the model contends that regulatory agencies could also weaken local firms' incentive to comply with global voluntary environmental standards. Moreover, the model contends that Western linkages could have a moderating effect on the influence of domestic regulatory agencies. Figure 3.1 presents the framework of this dissertation.

Figure 3. 1 A Model of Firm Compliance with Global Voluntary Standards



The remainder of this chapter includes three parts. Section 2 presents a literature review of institutional theory which provides the theoretical foundation for this study. The following section clarifies the assumptions and scope of the framework for this study. This section will articulate the four main propositions of this dissertation. In the final section, the main theoretical contributions and limitations are summarized.

Theoretical Background: Institutional theory

Corporate social responsibility (CSR) has evolved into a comprehensive concept that involves three dimensions: environmental, social, and governance (ESG). The focus of this project is firms' compliance with global private environmental standards, which is within the environmental dimension of corporate activities and can be generally categorized as corporate environmental responsibility (CER). Institutional theory has provided a rich analytic tradition to examine why some firms adopt CER practices while others do not.

Over the past decades, scholars from different disciplines have explored how formal and informal institutions affect organizational and economic activity (DiMaggio & Powell, 1983; P. A. Hall, 1986; Meyer & Rowan, 1977; North, 1990; Oliver, 1997; Scott, 2001; Williamson, 2000). One of the early research areas in institutional theory was to explain why organizations look so similar, and institutional theory emphasized the coercive, mimetic and normative isomorphism that shape firms' decisions to adopt specific organizational practices (DiMaggio & Powell, 1983). Based on institutional theory, extensive research has analyzed how the regulatory, normative, and cognitive aspects of the institutional pressure influence firms' environmental strategies and practices (Amran & Haniffa, 2011; Dean & Brown, 1995; Delmas, 2002; Jennings & Zandbergen, 1995; Jensen & Berg, 2012).

However, the early work in institutional theory was criticized for focusing too much on the homogeneity of organizational populations and not fully explaining why organizations respond to similar isomorphic institutional pressures differently (Hirsch & Lounsbury, 1997). To better explicate the variation in corporate environmental practices, scholars started to focus on the role of firm characteristics. For example, Levy and Rothenberg (2002) argued that a firm's history, organizational culture, and market positioning could influence its interpretation of the institutional environment. Delmas and Toffel (2004) further established a general framework that emphasized how company characteristics moderate the institutional pressures from stakeholders. Their framework suggests that the internal organization of the firm matters because it influences how managers perceive institutional pressures. Empirically, scholars have studied the relationship between corporate environmental strategy and various

organizational characteristics such as firm size (Baumann-Pauly et al., 2013; Boesso & Kumar, 2007; Neu et al., 1998; Patten, 2002a; Roberts, 1992), board size and diversity (Ben Barka & Dardour, 2015; de Villiers et al., 2011; Haniffa & Cooke, 2005; Liu, 2018), corporate governance rating (Chan et al., 2014; Kassinis & Vafeas, 2002), ownership structure (Darnall & Edwards, 2006), and corporate identity and managerial discretion (Sharma, 2000). Their research suggests that organizational characteristics significantly affect CER practices.

Recent work in institutional theory has shifted the focus from developed countries to emerging economies. Marquis and Raynard (2015) define emerging economies as "countries undergoing fast-paced turbulent change as a result of economic liberalization, rapid industrialization, and increased integration into the global economy." They claim that firms' institutional strategies are essential in emerging economies, and they categorize three types of institutional strategies: relational, infrastructure-building, and socio-cultural bridging.[27] Their research direction echoes other recent studies which examine the differences in firms' CSR practices between developed countries and emerging economies (Ali et al., 2017; Ali & Frynas, 2018).

Due to the institutional difference between developed countries and emerging economies, Qin et al. (2019) have constructed a general framework for CER research and extend the framework to the Chinese context. By integrating institutional theory (Delmas & Toffel, 2004; DiMaggio & Powell, 1983), stakeholder theory (Donaldson

[27] Relational strategies are networking efforts to manage dependence relationships with key stakeholder groups; infrastructure-building strategies tackle underdeveloped social, technological, and physical infrastructure; socio-cultural bridging is addresses demographic issues, such as lack of available skilled workers, ideologically-fueled social unrest, and local hostility toward growing migrant workers, that shape companies' competitive environment (Marquis & Raynard, 2015).

& Preston, 1995; Freeman, 1994; Frooman, 1999), and legitimacy theory (Deegan & Blomquist, 2006), their framework proposes that firms' CER practice can be determined by three types of factors: company characteristics, stakeholder pressure, and contextual factors. Their framework contends that firms' CER practice can improve firms' environmental accountability. By showing environmental accountability, a firm can legitimize its environmental performance with its stakeholders and hence bring firm value in the end. Although Qin et al.'s general framework is more applicable in emerging economies, it still has some limitations. First, although the framework lists the most important factors related to firms' CER, the framework does not specify how these factors affect firms' CER. In other words, the framework does not generate propositions for empirical study. Second, the framework does not explore the interaction between company characteristics, stakeholder pressure, and contextual factors. Qin et al.'s framework outlines some relevant factors for this dissertation, but it is unable to clarify how these factors contribute to the variation in firms' compliance with global private environmental standards.

Overall, the development of institutional theory has provided several critical insights for this thesis. First, firms are rational actors who think strategically about institutions in both global and local contexts (Marquis & Raynard, 2015). Put another way, firms are not just passive recipients of top-down institutional pressures; they have the capacity and agency to tackle institutional challenges strategically. Second, firms are embedded in complex networks of stakeholder groups. Firms need to legitimize their performance to satisfy multiple stakeholders, and the prioritization of firms' relational strategies could vary depending on the context. Third, company

characteristics could have moderating effects on stakeholder pressure (Delmas & Toffel, 2004). Under similar stakeholder pressure, firms with different characteristics could respond to the pressure differently. Finally, emerging economies have unique sociopolitical and cultural institutions, and these institutions could affect firms' institutional strategies (Marquis & Raynard, 2015; Marquis & Qian, 2013). The general framework of CER practice should adjust to the context of emerging economies.

Toward an Integrative Framework

Based on assumptions from institutional theory, this dissertation attempts to explain the variation in firms' compliance with global voluntary environmental standards. The main actors of my model are firms in emerging economies and their main stakeholder groups, including regulatory agencies and Western stakeholders. Beyond the firm characteristics mentioned by institutional theory, I focus on the properties of firms' ties with regulatory agencies and Western stakeholders and the moderating effect of Western linkage on regulatory pressure.

Assumptions and Scope

The framework for studying firms' compliance with global voluntary environmental standards is built on several assumptions. First, the model assumes that firms have capacities and independent preferences to make decisions regarding compliance with global voluntary environmental standards. Specifically, the model assumes that boards

of directors play a key role in making decisions on firms' sustainable operations and performance, and this assumption is largely supported by existing empirical studies (Amran et al., 2014; Chams & García-Blandón, 2019; Walls et al., 2012). In the context of green bonds, this framework focuses on the firms which meet a minimum threshold of capital, governance structure, knowledge, and willingness to issue green-labeled bonds. Firms that do not have capacities and access to issue green bonds are beyond the scope of this model.

Second, based on the insights of club theory, firms are assumed to be rational actors, and their decision to adopt global private standards is based on cost and benefit calculation (Potoski & Prakash, 2009).[28] Moreover, based on institutional theory and stakeholder theory, firms are strategic actors who will adjust their behaviors to stakeholders' credible threats. For instance, studies of corporate social responsibility show that firms strategically change their behaviors in response to pressure from transnational campaigns and the threat of governmental regulation (Baron, 2001; Haufler, 2003; Vogel, 2005).

Finally, this study assumes firms are relational actors rather than autonomous entities. Firms are embedded in networks of social, professional, and exchange relationships with other organizational actors, and these inter-organizational ties could provide opportunities or constraints for the firms' behaviors and performance (Gulati et al., 2000). Furthermore, not all inter-organizational ties are equally salient for firms.

[28] Firms' profit-seeking is flexible and complicated, which can include organizational, locational, international, political, and normative dimensions (Dunning, 1993; Fort & Schipani, 2004; Sell & Prakash, 2004). Studies of firms' behaviors provide evidence to support this assumption. For example, a survey of ISO 14001-certified enterprises/organizations in China, (Zeng et al., 2005) found that 52% of firms rank "to enter international market" as the motivation in implementing the ISO 14001 certification and 35% of respondents chose "to improve management."

The strategic importance of stakeholders could depend on their power to influence the firm, the legitimacy of the stakeholder's relationship with the firm, and the urgency of the stakeholder's claim on the firm (Mitchell et al., 1997). In brief, this relational approach prevents us from only focusing on actor characteristics and ignoring their relationships (Hadden, 2015; Hafner-Burton et al., 2009; Oatley et al., 2013).

Compliance with Global Voluntary Environmental Standards

Complying with global voluntary environmental standards is one special type of CER practice: it requires firms to adopt standards established by foreign non-state actors. Firms can decide the level of compliance, selecting parts of the standard to comply with. Based on previous research, this model assumes that firms decide the level of compliance through the calculation of benefits and costs based on their strategic networks. The benefit of compliance comes mainly from building reputation or maintaining legitimacy. The reputation can help firms differentiate their projects from low-quality ones, which can help firms attract investments from ethical investors and avoid activism that could harm business results. In other words, the reputational benefit can generate material benefits in the form of market demand and higher sales (Qin et al., 2019).

Complying with global standards also produces adjustment costs for firms. The adjustment costs include the fee for certification and the effort and risk of disclosing information. Global environmental standards usually have strict requirements for

information disclosure. When the level of compliance increases, this adjustment cost will increase too.

The reputational benefit of compliance can come from multiple stakeholders. Since previous studies found that the influence of the public and NGOs on CER is insignificant in the context of China (He et al., 2016; Li et al., 2018), this model focuses on the two most important groups of stakeholders: domestic regulatory agencies and Western stakeholders.

Regulatory Agencies

My model emphasizes that policy signals from domestic regulatory agencies' will influence firms' compliance with global voluntary environmental standards. Prior scholarship has identified the government as one of the external stakeholders for a firm to pursue CER practices (Henriques & Sadorsky, 1996; Luo et al., 2012). In particular, several studies indicate that the government is the primary driver of CER or CSR behaviors in China (He et al., 2016; Luo et al., 2017; Qin et al., 2019; Wang et al., 2018). Firms have an incentive to follow the government's policy signals because they hope to enhance their access to information and preferential treatments from the government (Hillman, 2005; Kitzmueller & Shimshack, 2012). Also, since governments' norms and standards are one source of legitimacy, firms can gain legitimacy by following the government, and the legitimacy could help firms improve their firm value (Marquis & Qian, 2013). Thus, when regulatory agencies encourage compliance with global voluntary environmental standards, firms are more likely to comply with these standards.

However, contrasting with extant scholarship, I argue that governments in emerging economies could also weaken firms' incentive to comply with global voluntary environmental standards. Most existing studies assume a government is a unitary actor; however, regulatory agencies in a government might have distinct preferences toward global voluntary environmental standards. For example, some regulatory agencies, such as the NDRC in China, might still emphasize economic development over environmental protection, and they might prefer loose environmental standards to maintain the competitive niches of local industries. When regulatory agencies have different preferences toward global voluntary environmental standards, this could lead to regulatory inconsistency. Under this situation, firms might choose not to comply with global voluntary environmental standards if the major regulatory agency did not strongly encourage this kind of behavior.

Proposition 1: When the major regulatory agency does not encourage firms' compliance with global environmental standards, firms in emerging economies will have weaker compliance with those standards.

Political Connections

Political connections, meaning ties with the government, could be strategic assets for firms. Political connections could bring corporations not only more preferential treatments, such as bailouts, better permits, lighter taxation, or relaxed regulatory enforcement but also accesses to trusted information and greater legitimacy

(Faccio et al., 2006; Hillman, 2005; Kitzmueller & Shimshack, 2012; Siegel, 2007). Previous studies have found that firms with political connections could have better financial performance than firms without such connections (Fisman, 2001; Peng & Luo, 2000).

Moreover, political connections with the government could be more important for firms in emerging economies because the formal institutions are underdeveloped and produce higher political uncertainties for firms (Marquis & Raynard, 2015; Peng & Heath, 1996). Political connections can reduce the uncertainties between the firm and the government, helping firms mitigate political threats from the government. The benefit of political connections could be larger in the ore highly regulated industries (García-Canal & Guillén, 2008; Hadani & Schuler, 2013).

Since political connections can help firms mitigate political hazards, firms with more political connections are more willing to adopt risky strategies, which could potentially bring in higher financial returns. Prior scholarship has found that firms with political connections engage more in risk-taking (Boubakri et al., 2013). For example, politically connected firms are more likely to have high leverage ratios (Bliss & Gul, 2012), invest more in R&D (Kotabe et al., 2017), and pursue internationalization (Albino-Pimentel et al., 2018; Liang et al., 2015; Sharma et al., 2020; Tihanyi et al., 2019).

Adopting global environmental standards is also a risky strategy for firms in emerging countries. On the one hand, complying with global environmental standards could improve firms' global reputation, which could lead to higher financial returns. On the other hand, domestic regulatory agencies might not support the global

environmental standards, and some of them might even challenge the legitimacy of firms' compliance, which could lead to conflicts within firms' stakeholders. However, when firms have more political connections, they might have more ways to reduce the political threat of regulatory agencies. For instance, firms might have more trust from the regulatory agencies; firms might have more resources to shield them from regulatory agencies' pressures, or firms might have more means to mediate the conflicts within stakeholders.

Based on the above logic, this model predicts that firms with more political ties will have a stronger incentive to adopt a higher level of compliance with global voluntary environmental standards.

Proposition 2: When firms have more political connections, firms in emerging economies will have stronger compliance with global environmental standards.

Western Linkages

This model argues that Western linkages are the main international factor that influences a firm's reputational benefit. By modifying Levitsky and Way's (2010) classic definition, Western linkages in this dissertation indicate the number of ties (economic, political, social, and organizational) and cross-firm flows (of capital, goods and services, people, and information) between firms in emerging economies and organizations in the US and the EU. In the language of network analysis, the concept

of Western linkages can be measured by *degree centrality*. Degree centrality is a measure of an actor's level of involvement or activity in the network (Prell, 2012). For example, when a Chinese firm has more ties with firms in the US and EU, its degree of centrality becomes higher.

The process of globalization has generated complex networks between firms in emerging markets and Western stakeholders. In the context of China, studies found that Chinese corporate elites have become more globalized and established connections with Western corporate elites (Deng, 2012; Graaff, 2014), and one study on leading Chinese transnational corporations found that more than a quarter of the Chinese directors have been educated abroad (De Graaff, 2020). Moreover, studies have shown that Western linkages can have significant positive impacts on Chinese firms' CER or CSR performance (Cheung et al., 2015; Dong et al., 2014; Guo & Zheng, 2021; Khalid et al., 2021; Li et al., 2021; McGuinness et al., 2017; Zhang et al., 2021).

When firms have more Western linkages, the reputational benefits from Western ethical investors, shareholders, or board members will become more important. This amplifying effect could come from two channels. First, actors with a higher degree of centrality might have more options for receiving information and resources (Borgatti et al. 1998; Freeman, 1978). Western linkages help firms in emerging markets receive information, skills, and money from the West, which could enhance firms' competitive advantage. To maintain the advantage, firms with more Western linkages might put more weight on building a reputation with Western stakeholders. To deliver a credible commitment to Western stakeholders, complying with global environmental standards becomes a crucial strategy for firms in emerging markets to maintain their brand image.

Second, the subject with a high degree of centrality could also be heavily influenced or constrained by others (Bodin & Crona, 2009; Frank & Yasumoto, 1998). To avoid the problem of greenwashing, Western stakeholders might actively require firms in emerging markets to comply with global environmental standards. In this situation, firms with more Western linkages have a higher level of exposure to the pressures from Western stakeholders. If firms ignore these pressures, they might not enjoy the reputational benefit in the future. Thus, firms have a strong incentive to respond to the pressures by complying with global environmental standards.

In a nutshell, when firms have more Western linkages, complying with global standards can bring them higher reputational benefits. Firms might actively pursue a higher level of compliance, or they might do so to meet Western stakeholders' demands.

Proposition 3: When firms have more Western linkages, firms in emerging economies will have stronger compliance with global environmental standards.

Moderating Effects of Western Linkage

While institutional theory has identified the moderating effects of firm characteristics (Delmas & Toffel, 2004), extant scholarship largely focuses on how firms' characteristics moderate institutional pressures rather than the moderating effect of firms' ties. Recent studies start to explore the moderating effects of firms' ties, but

they focus on how firms' ties moderate the effects of firm characteristics (Marquis & Qian, 2013). Whether firms' ties moderate institutional pressures remains unknown.

My model contends that Western linkages could have a moderating effect on regulatory agencies' signals. When the regulatory agency does not encourage firms to adopt global voluntary environmental standards, firms usually will have a weaker incentive to adopt them. However, if the firms have more Western linkages, they will still have a strong incentive to comply. In this situation, the firms need to balance the opposing pressures from regulatory agencies and Western stakeholders, and firms might choose a compromise position, a medium level of compliance with global environmental standards, in the end. In other words, the number of Western linkages will weaken the effect of the regulatory agency's discouragement of firms' compliance with global environmental standards.

> *Proposition 4: When the major regulatory agency does not encourage firms' compliance with global environmental standards, firms with more Western linkages will have stronger compliance with global environmental standards.*

Conclusion

The framework developed in this chapter aims to explain why some firms in emerging economies comply with global environmental standards while others do not. The conceptual model argues that firms' compliance with global environmental standards could be explained by regulatory agencies' preferences, firms' networks, and

firm characteristics. Based on the model, this chapter provides four propositions which will be tested empirically in the next chapter.

This framework contributes to the existing literature in several ways. First, compared to extant frameworks, the model can better explicate why firms under similar institutional pressures have different compliance outcomes and why the same firms may have different compliance outcomes from one period to the next. Secondly, unlike the existing approaches, this study does not conceptualize the government as a unitary actor, so it can further examine the mixed effects of fragmented regulatory agencies on firms' behaviors. Thirdly, the model goes beyond firm characteristics and focuses more on the properties of firms' ties. In particular, the model argues that firms' Western linkages and political connections could have positive effects on firms' compliance with global environmental standards. Finally, the model extends the existing studies on the moderating effect of firms' ties by identifying the moderating effects of firms' ties on institutional pressures. It contends that Western linkages can undermine the effect of regulatory agencies' discouragement on firms' compliance with global standards.

The primary goal of this framework is to explain the puzzle illustrated by the green bonds in China. Although this framework might apply to other issue areas or emerging economies, it might still have limitations. For example, the influence of civil society might be more robust in some issue areas or emerging economies. Also, there might be some moderating effects that are not explored by this framework. This dissertation will test the external validity in Chapter 6, but the preliminary exploration does not preclude the revision of this framework for future research on different issue areas and emerging economies.

Chapter 4: Firms' Compliance in China

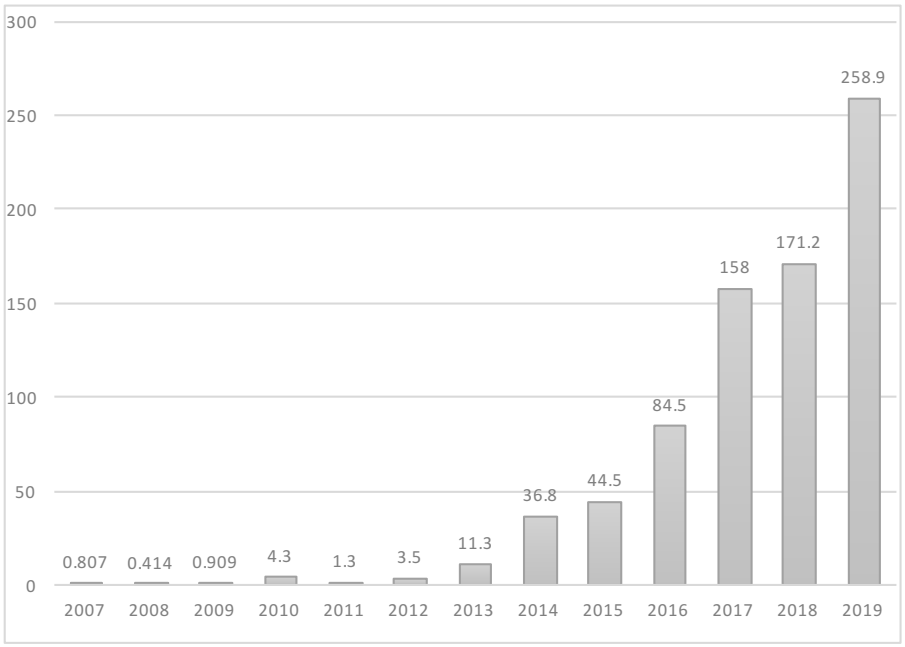
Introduction

The global green bond market emerged around 2007 and 2008 (Figure 4.1). In 2007, the European Investment Bank issued the first Climate Awareness Bond on the Luxembourg Stock Exchange (LuxSE). In 2008, the World Bank and *Skandinaviska Enskilda Banken* launched the first bond labeled ‘‘green’’ together. Since 2013, more and more municipalities and corporate issuers, such as Toyota and Apple, have joined this market. The major security exchanges also have introduced platforms for green securities. The London Stock Exchange (LSE) included a green bonds list in 2015, and the LuxSE launched the Luxembourg Green Exchange (LGX) in 2016. Up to 2019, the cumulative issuance of green bonds in the world had reached USD776bn, and the cumulative number of green bond issuers was 927 (Almeida, 2020).

The global green bond market is led by developed countries. Emerging markets, in turn, have become active participants since 2016. In particular, the green bond market rapidly expanded in 2016 largely due to China's participation, and China became the second-largest green bond market in the world. However, the quality of Chinese green bonds varies significantly: some have not acknowledged external reviews, and some do not meet the green bond definition proposed by the Climate Bond Initiative (CBI). According to the CBI, 38% (USD14.2bn/RMB94.3bn) of the total Chinese green bond issuance in 2017 did not meet the green bond definition of the Climate Bonds Initiative, a percentage that increased to 44% in 2019 (Meng et al.,

2020). Moreover, near 28% of the Chinese green bonds in 2019 did not acknowledge any external review and increased from 2017 (14%).

Figure 4. 1 Global Trend of Green Bond Volume, 2007-2019 (USD billion)



Source: Almeida (2020)

This dissertation aims to explain why some Chinese firms comply with global standards of green bonds while others do not. In Chapter 3, I broadened institutional theory to develop a framework that emphasizes regulatory agencies' preferences and firms' ties. In this chapter, I empirically examine the factors that determine the compliance of Chinese green bond issuers with the Climate Bonds Standard (CBS). Based on the model I developed in Chapter 3, I will investigate whether the preferences of regulatory agencies, and political ties, and Western linkages of firms shape Chinese green bond issuers' compliance with the CBS. Moreover, I will further test whether

Western linkages have a moderating effect on the influence of regulatory agencies' preferences.

Based on a unique dataset of 224 Chinese green bonds issued between 2016 and 2018, the result of the quantitative analysis indicates that when the major regulatory agency does not encourage compliance with global green bond standards, Chinese green bond issuers are more likely to present a reduced compliance level. The models also show that firms with more political connections to governments and that have more Western linkages are more likely to choose high-level compliance. Finally, the result suggests that when the major regulatory agency does not encourage compliance, firms with more Western linkages are still likely to adopt medium-level compliance rather than low-level compliance.

The analysis will be divided into five parts. The first part describes how green bonds are governed both at a global level and domestically in China. The second part introduces the global practice of issuing green bonds as the baseline for the case studies in the Chinese context. The third part examines the process of issuing green bonds in China and provides evidence for some of the assumptions of the framework in this dissertation. The forth part is the quantitative analysis. The main hypotheses are generated from the framework structured in Chapter 3. Then, the research method and results are presented. Finally, this chapter concludes the main findings.

Governance of Green Bonds

In general, green bonds are debt instruments that are issued with "green" labels to ensure that the proceeds will be exclusively directed to finance "green" projects.

However, the specific criteria to define green bonds and green projects vary depending on which global standards and national regulations are adopted. For example, according to the Green Bond Principles, green bonds are defined as "any type of bond instrument where the proceeds or an equivalent amount will be exclusively applied to finance or re-finance, in part or in full, new and/or existing eligible Green Projects and which are aligned with the four core components of the GBP." For the Climate Bond Standards, an eligible green bond should meet the Climate Bonds Taxonomy.

In the next section, I will describe the current global standards for green bonds, and then explain the difference between global and China's standards for green bonds.

Global Standards for Green Bonds

The emergence of the green bond market is largely driven by the demand of institutional investors. More and more responsible investors are interested in purchasing green bonds to demonstrate their commitment to sustainable development. These investors are very sensitive to the problem of greenwashing[29], meaning that their investments do not generate real positive environmental impacts. A total of 79% of the respondents of a survey on European investors reported that they wouldn't purchase a green bond if its proceeds were not clearly distributed to green projects, and 55% of respondents said they would sell a green bond if its post-issuance reporting was poor (Almeida et al., 2019).

[29] Greenwashing can be defined as selective disclosure whereby firms "mislead consumers about their [actual] environmental performance"(Delmas & Burbano, 2011).

To avoid the problem of greenwashing, green bonds issued on global markets are initially regulated through global standards established by private authorities. The Green Bond Principles (GBP) and the Climate Bonds Standard (CBS) are two globally accepted standards in the green bond market[30]. The initial version of the GBP was formulated in early 2014 by the International Capital Market Association (ICMA) and updated annually. The ICMA is an industrial association of participants in the capital market, which currently has near 600 members located in over 60 countries. According to its website, the mission of the ICMA is to "promote resilient well-functioning international and globally coherent cross-border debt securities markets, which are essential to fund sustainable economic growth and development." The ICMA has issued several voluntary guidelines in the area of sustainable finance, including the GBP, Social Bond Principles (SBP), Sustainability Bond Guidelines (SBG), and Sustainability-Linked Bond Principles (SLBP).

The GBP is a voluntary process standard that defines methods and processes that companies can use to develop their operational frameworks (Park, 2018a). The GBP is governed by an Executive Committee, which consists of investors, issuers, and underwriters. The ICMA is currently the Secretariat for the GBP. The members of GBP

[30] There are other global standards and taxonomies on green bonds other than the GBP and the CBS. First, some regional international organizations have designed their own green bond standards, such as the EU Green Bond Standard and the ASEAN Green Bond Standards. Second, ratings agencies are potential producers of standards. For example, Moody's and S&P Global Ratings have constructed green bond rating methodologies and services. Finally, several green bond indices have been established to provide comparable data on performance for investors. There are some common indices in the market, including the Bank of America Merrill Lynch Green Bond Index, the Bloomberg Barclays MSCI Green Bond Index, the S&P Green Bond Index, the Solactive Green Bond Index, the ChinaBond China Climate-Aligned Index, and the CUFE-CNI Green Bond Index Series. This study focuses on the GBP and CBS for two main reasons. First, these two standards are created by private authorities, and this study aims to understand implementation of global private standards. Second, the GBP and CBS are the dominant standards accepted by nearly all other standards.

are the organizations that have issued, underwritten or placed, or invested in a Green Bond, and they need to apply and be approved by the Secretariat. The members have the right to vote in an election of the Executive Committee. They may participate as observers for other stakeholders, such as NGOs, universities, auditors, consultants, and service providers. There is an Ordinary General Meeting every year for members and observers, who may provide feedback to the Executive Committee.

Specifically, the GBP proposes four core components for a credible green bond: 1) use of proceeds, 2) process for project evaluation and selection, 3) management of proceeds, and 4) reporting. For each component, the GBP encourages some best practices (Table 1). In particular, the GBP recommends that green issuers explain how their Green Bond aligns with the four core components of the GBP in a Green Bond Framework and encourages green issuers to adopt a pre-issuance external review. The ICMA also disseminates the best practice of GBP by providing disclosure templates for issuers and external reviewers on its website and maintaining a database for sustainable bonds around the world (Park, 2018a).

Table 4. 1The Green Bond Principles

Components	Key content
Use of proceeds	• All eligible Green Projects should provide clear environmental benefits. • Provide 10 categories for eligible green projects.
Process for project evaluation and selection	• The issuer of a Green Bond should clearly communicate to investors the process by which the issuer determines how the projects fit within the eligible Green Projects categories.
Management of proceeds	• The net proceeds of the Green Bond should be credited to a sub-account, be moved to a sub-portfolio, or otherwise be tracked by the issuer.
Reporting	• Information on the use of proceeds should be renewed annually until full allocation. • Issuers should refer to and adopt the Harmonized Framework for Impact Reporting.

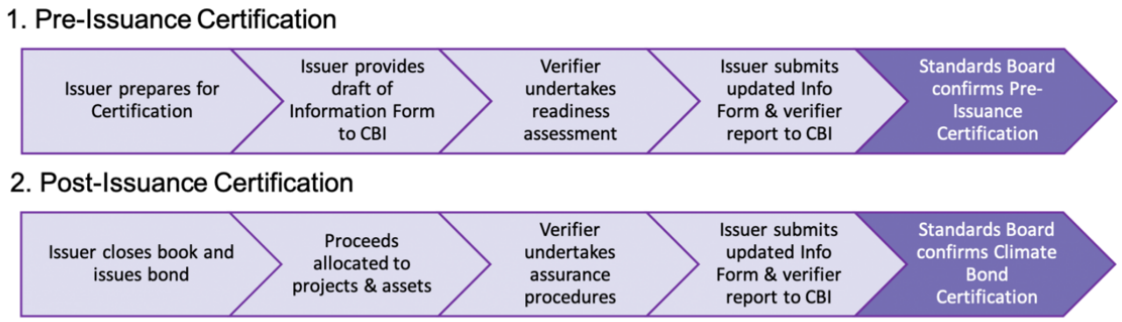
Source: GBP (2021)

The Climate Bonds Initiative (CBI) is an international nonprofit organization that aims to mobilize the global bond market for climate change solutions. In contrast to GBP of the ICMA, the CBI develops transnational governance, which involves the establishment of standards, assessment for compliance with the standards, a certification seal or label, accreditation of the certifier, and compliance monitoring (Park, 2018a). The CBI established the Climate Bonds Standards (CBS) in 2010, which is built on the four core components of GBP. In 2012, the CBI published its first Climate Bonds Taxonomy, which focused on the sectors of solar and wind energy (Tripathy et al., 2020). The construction of the Climate Bonds Taxonomy involved multiple stakeholders, such as academic experts, technical experts, and market players, in the specific sector. The draft criteria were released for public consultation before the final approval by the Climate Bonds Standards Board (Tripathy et al., 2020). Through this process, the CSB and taxonomy are continuously updated and expanded, setting the overarching standard and sector criteria for Climate Bonds Certification.

The CBI provides both pre- and post-issuance certifications (Figure 4.2), which are conducted by third-party verifiers approved by the CBI. For the pre-issuance certification, the issuers need to provide information on project selection and internal control on the proceed. After the issuance, the issuers need to continually disclose the process to determine the eligibility of projects, the management of the proceeding, and the impact of the green projects. To ensure the independence of third-party verifiers, the CBI adopts the International Standard on Assurance Engagements (ISAE 3000),

which requires verifiers to have an internal control of process to manage potential conflicts of interest (Rose, 2019).

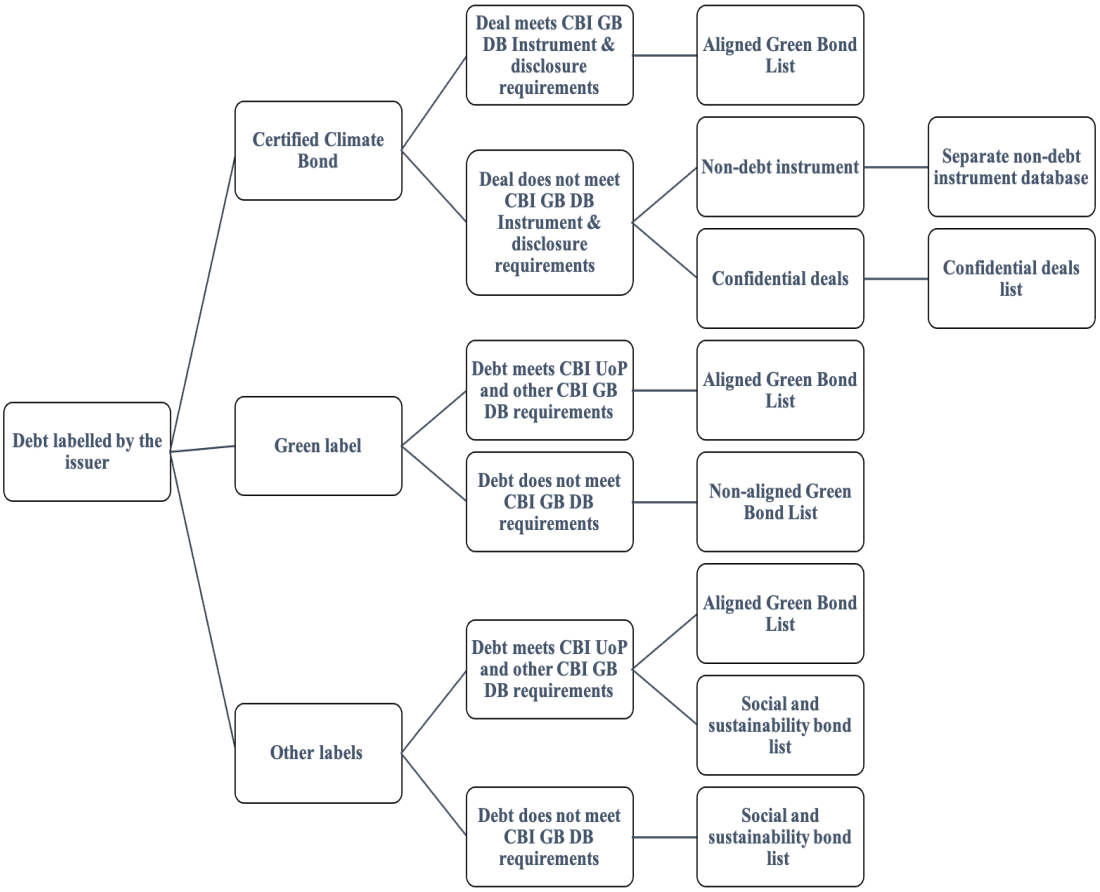
Figure 4. 2 CBI's Certification Process



Source: CBI website

In addition to green bond certification, the CBI also has built a green bond database, which has become the main data source for most green bond index providers. A green bond can be included in the Climate Bonds Initiative database only if it meets two requirements: (i) the green bond comes from eligible sectors aligned with the Climate Bonds Taxonomy and (ii) the green bond's use of proceeds meets the eligibility list of projects and assets from the Climate Bonds Standard. Together, the eligible green bonds for the CBI are not necessarily certified as green bonds by the CBI, but meet the CBI's Sector Criteria and the 2-degree goal of the Paris Agreement. The CBI's decision tree can be summarized in Figure 4.3.

Figure 4. 3 CBI's Green Bond Screening Process



Source: Climate Bonds Initiative (2020)

Taken together, both the GBP and the CBS encourage green bond issuers to voluntarily disclose information about the use of proceeds, the process for project evaluation and selection, management of proceeds, and reporting. However, there are some differences between the two standards. First, the CBS is more specific than the GBP. The GBP only suggests ten broad categories of the use of proceeds, while the CBS has established the Climate Bonds Taxonomy, which can identify not only eligible sectors for green bonds but also the projects' alignment to the zero-carbon trajectory by 2050. Moreover, the GBP has general principles for all kinds of green bonds, while

the CBS provides sector-specific standards and different requirements for different types of green bonds.

Secondly, the CBS has stricter requirements on the external review than the GBP. The GBP recommends that an issuer's process for project evaluation and selection be supplemented by an external review. The GBP accepts four types of external review: (1) consultant review (or "second party opinions"), (2) verification from qualified parties (or "assurance"), (3) certification from qualified third parties/certifiers, and (4) rating from qualified third parties, such as specialized research providers or rating agencies. Most issuers might choose the second party opinion where different external reviewers produce reviews based on their methodologies which may not be comparable among reviewers. Yet, the CBS only accepts type (3) external review, which requires green bond issuers to participate in the Climate Bonds Certification.

Thirdly, the CBS governance is more inclusive than the GBP (Park, 2018a). The CBP is mainly governed by market participants, while the CBS allows more stakeholders to participate in the criteria-making process for a particular sector. Finally, the CBS has more explicit bright-line rules on enforcement than the GBP (Park, 2018a). If green bond issuers had violated the requirements of CBS, the CBI would withdraw the certified label from the green bonds. On the other hand, the GBP does not have any articles related to the punishment for violation of the principles.

Currently, most green bond issuers in the world comply with these global standards. According to CBI's data, 86% of the bonds issued had at least one form of

external review in 2019, and only 14% did not have any form of external review (Almeida, 2020).

Green Bond Governance in China

Unlike the global green bond market, which is governed by private authorities, the green bonds in China are mainly promoted and regulated by the government. Although the concept of ‘‘responsible investment’’ has gradually become popular, its influence is still limited to create bottom-up private governance of green bonds in China (Huang & Yue, 2020). In China, the bond market structure itself is created and shaped by the government and financial repression system (Huang & Yue, 2020). To maintain the financial stability, China’s overall bond market has three main trading venues: the Interbank Market (银行间市场), the Exchange Market (交易所市场), and the Over the Counter Market (柜台交易市场). In August 1995, the government officially allowed the Exchange Market, including Shanghai and the Shenzhen stock exchanges, to be part of the bond markets in China[31]. However, concerned about an overheated stock market, the PBoC decided to create the Interbank Market in 1997, which is now the dominant bond market in China accounting for over 90% of onshore bond trade and 62% of onshore green bond trade (Meng et al., 2020).

31 In other words, Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) trade both stocks and corporate bonds. In addition, trades of bonds between Interbank Market and HKES is now allowed through the Bond Connect (债券通).

In China, the issuance of a bond involves a political process. Bonds are classified by issuers[32], issued in segmented markets, and regulated by different agencies based on the class of bond instrument (Table 4.2). This fragmented structure reflects the logic of separate supervision promoted by top-level financial policymakers since 1990s[33]. The Interbank Market is only open to institutional investors, such as commercial banks, asset managers, insurers, securities houses, pension funds, charitable funds, and other long-term investors, while the exchange markets are retail markets for individual and small- and medium-size institutional investors. All bonds need to undergo administrative review and receive permission from related regulatory authorities, which is not required in other countries (Kidney, 2017).

Table 4. 2 Bond Market and Regulation in China

Class of Instrument	Market	Regulator
• Treasury bonds • Local government municipality bonds	• Interbank • Exchange	Ministry of Finance
• Financial bonds	• Interbank	PBoC
• Enterprise bonds	• Interbank • Exchange	NDRC
• Non-financial enterprise debt (such as medium-term notes) • Financing instruments	• Interbank	National Association of Financial Markets Institutional Investors (NAFMII)
• Corporate bonds	• Exchange	China Securities Regulatory Commission (CSRC)

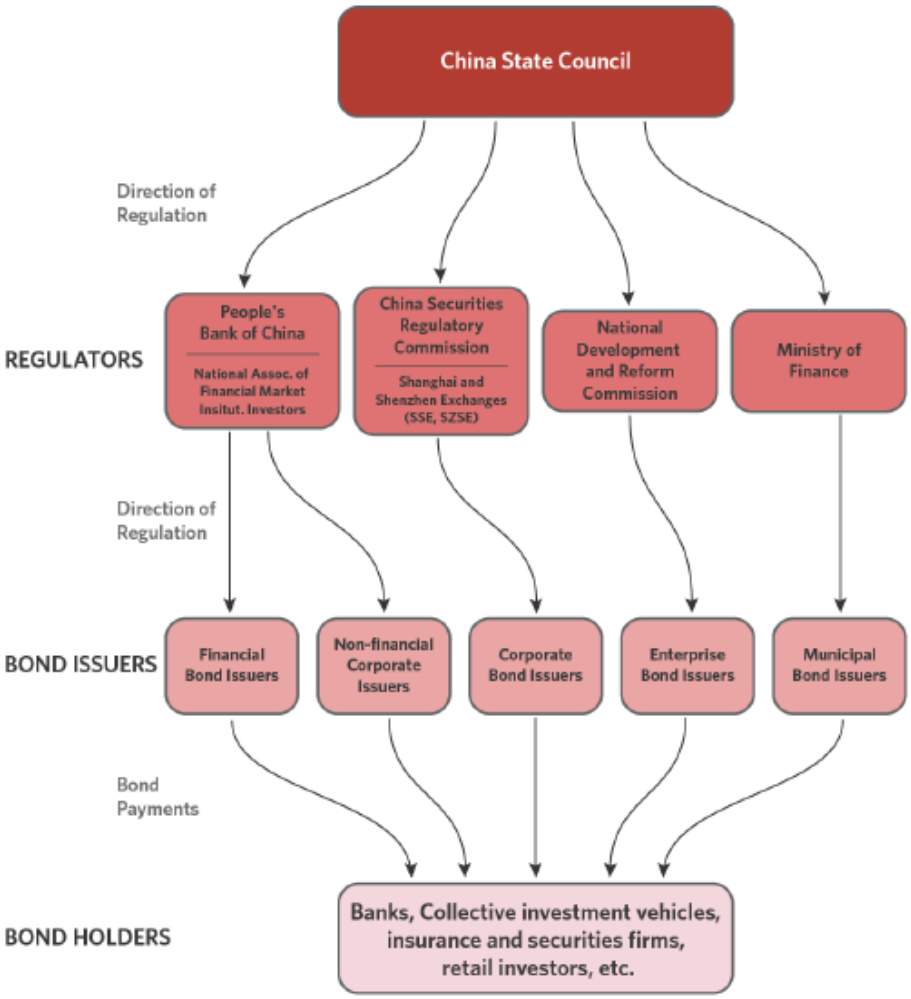
Source: Author's compilation

As a result, the governance of green bonds in China is heavily influenced by existing governmental regulations of the bond market. Depending on the types of green

[32] The classification is summarized in Appendix 1.
[33] Before 1990s, the common model in financial sector is mixed operation. Since 1993, Zhu Rongji started new financial reforms based on the model of separate supervision.

bond issuers, the regulatory oversight is distributed among multiple agencies (Figure 4.4), including the People's Bank of China (PBoC), the National Development and Reform Commission (NDRC), China Securities Regulatory Commission (CSRC), Ministry of Finance (MoF), semi-regulatory organizations, and the National Association of Financial Market Institutional Investors (NAFMII)[34].

Figure 4. 4 Map of China's Green Bond Regulators and Market Participants



Source: Escalante et al. (2020)

[34] NAFMII is an industry association under the PBoC, and the Shanghai and Shenzhen Stock Exchanges, which are overseen by the CSRC.

Due to fragmented regulations of the bond market in China, green bond regulations have not yet been harmonized (Table 4.3). In December 2015, the People's Bank of China (PBoC) published regulations for green bond issuance in the China Interbank Market, and the National Development & Reform Commission (NDRC) released parallel guidelines for the state-owned enterprises. According to my interview, the PBoC and the NDRC did not coordinate with each other during the guideline-making processes[35]. Since the guidelines of CSRC and NAFMII are relatively closer to PBoC's guidelines, the following analysis mainly focuses on the difference between PBoC's and NDRC's guidelines. In addition, since the first green municipal bond in China appeared late (2019), the MoF is not an active regulatory agency in the initial stage of market emergence.

Table 4. 3 Green Bond Standards under China's Regulatory Agencies

Types of Green Bonds	Green Financial Bond	Green Enterprise Bond	Green Corporate Bond	Green Debt Financing Instrument
Regulating Actors	PBoC	NDRC	CSRC	NAFMII
Policy Document	PBoC Announcement No. 39 December 22, 2015	Guidelines on Green Bond Issuance, NDRC No. 3504 December 31, 2015	Guiding Opinions for Supporting the Green Bond Issuance, CSRC No. 6 March 2, 2017	Guidelines on Green Debt Financing Tools for Non-Financial Enterprises, NAFMII No. 10 March 22, 2017
Use of Proceeds Classifications	Green Bonds Endorsed Catalog of Projects	NDRC Catalog	Green Bonds Endorsed Catalog of Projects	Green Bonds Endorsed Catalog of Projects

[35] Interview with expert at IIGF, CUFE, Beijing, 08/15/2019.

Allocation of Proceeds	100% of proceeds are required to be invested in green projects	Issuers can use up to 50% of the bond proceeds to repay bank loans and invest in working capital.	Issuers can use up to 30% of the bond proceeds to repay loans and invest in working capital.	100% of proceeds are required to be invested in green projects.
Management of Proceeds	A specialized account to be set up to clearly track the management of proceeds	Unspecified	A specialized account to be set up to clearly track the management of proceeds	A specialized account to be set up to clearly track the management of proceeds
Environmental Monitoring	Required for reporting	Required for reporting	Required for reporting	No requirement
Pre-issuance Verification	Encourage	No requirement	Encourage	Encourage
Post-issuance Verification	Encourage	No requirement	Encourage	Encourage
Use of Proceeds Reporting	Quarterly disclosure	No requirement	Annual disclosure	Biannual disclosure; Changes to use of proceeds announced publicly

Source: EIB & CGFC (2017); Zhang (2020); Escalante et al. (2020a)

In general, global standards for green bonds focus more on climate change mitigation and adaptation, while Chinese standards of green bonds pay more attention to projects with substantial environmental benefits and in line with industrial policy guidance, such as pollutant reduction, resource conservation, and ecological protection. Neither of the guidelines from the PBoC and the NDRC are consistent with the CBI's standards, because they include some ineligible projects, such as retrofits of fossil fuel power stations, clean coal and coal efficiency improvements, electricity grid transmission infrastructure that carries fossil fuel energy, large new hydro projects (>50MW) and landfill waste disposal. In addition, the CBS requires that 95% of proceeds should be linked to green assets or projects, while the NDRC's guideline

allows issuers to use up to 50% of proceeds to repay bank loans or invest in general working capital.

PBoC's guidelines are relatively more similar to the GBP and the CBS than are guidelines from the NDRC (Table 4.3). For example, the PBoC encourages issuers to publish an annual third-party verification/assessment report during the bond term, while the NDRC does not mention it in its guideline. PBoC's guideline also has stricter for reporting requirements[36], while the NDRC guideline does not mention rules for disclosure.

The difference between the PBoC and NDRC guidelines reflects the policy preference and priority in their respective fields of expertise. The motivation of the PBoC for promoting green finance is to make the financial system more sustainable and stable, which could be the foundation for the transition to a green economy. Thus, the PBoC prefers to foster international cooperation, follow the global standards of green finance, and gradually open the domestic financial market, which could accelerate domestic reforms (PBoC, 2021). Although the NDRC also cares about green economy transition, it gives priority to solving debt problems among state-owned enterprises. Consequently, the NDRC does not encourage external review, helping firms save money (China Economic Herald, 2016). The NDRC also allows firms to use 50% of the proceed from green bonds to pay back their old debts, which is not allowed by global green bond standards.

[36] For green financial bond, green bond issuers must notify the market on how the proceeds are being used each quarter, at the end of year report of funds, using a special auditor report before April 30th each year, in addition to reporting to the PBoC.

The divergent preferences of PBoC and NDRC can also be found in the past interactions between the two agencies. For the PBoC, financial liberalization, such as interest rate liberalization, has consistently been on its reform agenda since the mid-1990s. The PBoC officials preferred financial liberalization because they hoped to follow the Western experiences and weaken the administrative interventions in monetary policies from the other ministries (Shih, 2011). During the reform era, the NDRC has been the major power competitor with the PBoC, and it has fought hard to maintain its authority in the financial sector (Bell & Feng, 2013). Especially, the NDRC preferred overall planning and administrative approaches rather than the market-based approach favored by the PBoC (Bell & Feng, 2013). The market-based reform led by the PBoC sometimes can create reform pressures on the NDRC, pushing it to make moderate reforms. For instance, in the bond market, the PBoC announced measures for the management of short-term financing bonds in 2005, which relaxed administrative controls and made short-term financing bonds the most popular bonds in the Interbank Market. To increase the attractiveness of enterprise bonds, the NDRC decided to simply approval process of enterprise bonds and loosen the guarantee requirements in 2008 (Dong, 2015).

However, the PBoC's market-based reform of bond markets sometimes was blocked by the NDRC. For example, the PBoC tried to promote the midterm notes in early 2008, but this attempt was canceled a few months later. The reason could be the midterm notes had threatened the demands of enterprise bonds and corporate bonds, so the NDRC was against this policy (Dong, 2015). Although the stimuli after the 2008 global financial crisis made the midterm notes popular again, the NDRC did not fully

embrace the investment expansion (Heilmann & Shih, 2013). Overall, divergent preferences of PBoC and NDRC are caused not only by their distinctive expertise on a particular issue but also by their persistent competition for authorities in economic and financial policies.

Table 4. 4 Comparison of Green Bond Standards

	Management of proceeds	Reporting	External review
Green Bond Principles	Required	Required	Encouraged
Climate Bonds Standard	Required	Required	Required
PBoC's guideline	Required	Required	Encouraged
NDRC's guideline	Not Required	Not Required	Not Required

The Global Practice of Issuing Green Bonds

This section provides an overview of the best practice of issuing green bonds in the global market.[37] The process of issuing green bonds involves a range of stakeholders: issuers of the bond, investors in the bond, underwriters, lawyers, external reviewers of the bond's green label, credit ratings/index agencies, exchanges, national regulators, organizations that set international standards, fiduciary agents, and financial auditors. When issuers have identified bonds as the most suitable instrument to raise funds for their green projects, the first decision they encounter is whether to seek a green label for their bonds. A labeled bond involves both benefits and costs (Table 4.5).

[37] The general narrative of best practice in this section is based on following data sources: First, the best practices are summarized by international reports and websites (AsianBondsOnline, 2021; Kaminker et al., 2018). Second, the information of issuing green bonds comes in part from my participant observation in the CBI's Green Bond Training, April 27-29, 2021.

According to the CBI's global survey, the reputation benefits and market signal have been ranked as the top motivations for issuing green bonds, followed by a desire to limit climate change, while a desire to increase the stock price and concerns about public policy and regulation receive the lowest and second-lowest scores respectively (Harrison et al., 2020). The extra costs of having a green label include costs of certification, monitoring, internal control, and reporting. The issuers also face the reputational risk of been accused of "greenwashing" if their projects are not truly green.

Table 4. 5 Benefits and Costs of Issuing Green Bonds

Benefits	Costs
• Demonstrates and implements the issuer's approach to ESG issues • Can lead to oversubscription and the potential to increase issuance size • Improves diversification of bond issuer investor base, potentially reducing exposure to bond demand fluctuations • Evidence of more "buy and hold" investors for green bonds which can lead to lower bond volatility in the secondary market • Conveys reputational benefits (e.g., marketing can highlight issuer's green credentials and support for green investment) • Articulates and enhances the credibility of sustainability strategy ("money where your mouth is") • Gives access to "economies of scale" as most of the issuance costs are in setting up the processes • Leads to improved internal governance structures, communication, and knowledge sharing between the project side and the treasury side of the business due to enhanced tracking of proceeds and reporting	• Increases up-front and ongoing transaction costs from labeling and associated administrative, certification, reporting, verification, and monitoring requirements (cost estimates vary) • Brings reputational risk if a bond's green credentials are challenged • Creates risk because investors may seek penalties for a "green default" whereby a bond is paid in full, but the issuer breaks agreed to green clauses

Source: G20 Green Finance Study Group (2016)

The CBI's survey shows that of the stakeholder groups who influence the decision to issue a green bond, boards of directors have the most influence and employees are second, while regulators were cited as the least influential stakeholder group (Harrison et al., 2020). For firms that have a sustainability committee, the committee usually becomes crucial internal support for the decision to issue a green bond.

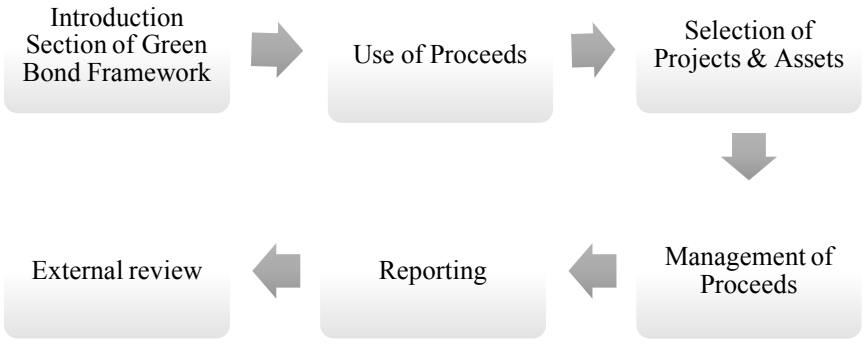
When firms decide to issue bonds with green labels, they usually follow a process similar to that of conventional bonds. They need first to decide where, such as the offshore market or the onshore market, to issue the bond and the currency of the issuance, both of which involve different regulatory and risk environments. Then, issuers need to obtain a credit rating, find underwriters, and register with regulatory agencies. With assistance from underwriters, issuers will decide the type, structure, and initial price for their bonds. They also must prepare the prospectus, comfort letter, due diligence, and other documents required by the exchanges.

Finally, the issuers and underwriters need to engage with investors and clients through roadshows and sales meetings. In this marketing phase, the issuer can choose either a public offering or a private placement. In a public offering, the issuance will be announced to the public through channels such as Reuters and Bloomberg, and the prospectus and initial price target of the bond will be publicly available. In a private placement, the issuer will connect with only a few target investors through underwriters. During the marketing campaign, the underwriter will handle the book-building process, collect the list of buyers and their feedback, and finalize the structure of the bond such as size, maturity, and price. If the size of the order is large, the price of the bond will

usually be lower. When the deal is reached, the bond will be delivered to the bondholders, and the issuer will receive payment through a national depository or a clearing system.

The main difference between issuing regular bonds and issuing green bonds is that the latter involves a green bond framework and external review (Figure 4.5). The green bond issuer and underwriters usually co-design a "green bond framework," which provides transparency and confidence to assure potential investors and other stakeholders that the green claim is valid and robust. Issuers also rely on Debt Capital Markets (DCM) desks and consultants for assistance (Harrison et al., 2020). According to CBI's survey, the issuance process usually takes less than one year (Harrison et al., 2020).

Figure 4. 5 Process of Green Bond Issuance



Source: CBI

In the text of the green bond framework, the issuer first needs to provide a statement of the environmental objectives of the green bond and the issuer's broader green objectives, explaining to investors how the green bond fits within the issuer's

long-term vision or strategy. The issuer also needs to identify the categories of eligible green projects to which the bond proceeds will be allocated. This means that the issuer must decide which set of green standards or taxonomies will be used for their selection of green projects. The issuer must then provide information on specific projects to which the bond proceeds will be allocated. The selected projects need to align with global standards, such as the GBP or the CBS, or taxonomies of green bonds, such as the EU taxonomy. The issuer needs to establish, document, and maintain a decision-making structure and process to determine the eligibility of the assets. For instance, the issuer can establish an internal team to oversee the implementation of its green bond framework. The issuer must also explain how the proceeds will be managed either through ring-fencing or earmarking.[38] Finally, the issuer needs to explain their plan for post-issuance reporting of allocation, eligibility, and impacts. The issuer is expected to update the report at least annually and on a timely basis if any material developments might affect the bond's green label. The updated report is usually published on the issuer's website, stock exchange's information dissemination portal, or local green bond platform. Since there are several methodologies used for impact reporting, the Green Bond Principles encourage issuers to disclose the applicable greenhouse gas accounting methodology and assumptions in the impact report.

After establishing a green bond framework, green bond issuers are encouraged to find an external third party to it. Since investors might not be able to evaluate the integrity of the green project, the independent external review allows for an informed

[38] Ring-fencing means that the issuer puts the proceeds into a specific subaccount or sub-portfolio; earmarking means that the issuer keeps the proceeds traceable rather than putting them into a subaccount.

investment decision before and after issuance. Nowadays, several different types of external reviews have emerged in the green bond market (Table 4.6). The best practice for external review includes both pre-issuance and post-issuance assessments, though the number of issuers who request post-issuance assessments is relatively small. When green bond issuers choose the type of external review, they consider local regulators' preference, the target investors' preference, the fee for external review, the timeline, and the issuers' marketing strategy. Fees for external review are lower than for credit ratings or legal support, and many jurisdictions, such as some ASEAN countries, offer subsidies or other contributions to support issuers who engage external reviewers (Azhgaliyeva et al., 2020). After green bond issuers and external reviewers reach a contract, the issuers usually provide a draft of their green bond framework and supporting information. The external reviewers then conduct a desk-based review of documents, interviews, and a site visit. The external reviewers will also use external data sources, such as governmental approvals and satellite imagery, for the assessment. After completing the assessment, the external reviewers provide a draft report to the issuers, arrange a close-out meeting, and publish the final report and opinion.

Table 4. 6 Types of External Review

Types of review	Feature	Service provider
Assurance	Independent assessment of the green credentials of a bond provided to the issuer by an external auditor	EY, Deloitte, KPMG
Second Party Opinion	Report providing an opinion on the framework, the bond's label, and issuer's sustainability/green narrative	Sustainalytics, Vigeo Eiris, DNV GL, CICERO, CECEP Consulting
Scoring & Rating	Report with scores for the issuer's framework against an established range	Moody's, S&P Global Ratings, JCRA, R&I, RAM Holdings
Certification	Formal endorsement of the bond's credentials and consistency with national/regional regulation or an accepted standard such as CBS	CBI and its approved verifiers

Sources: CBI

The most common type of external review is second party opinion (SPO), which accounts for 64% of global green bonds. When an external organization with environmental expertise conducts an SPO, it usually evaluates the issuer's green bond framework through the Green Bond Standard. Some organizations will further develop methodologies for assessment. The advantage of an SPO is that it is usually cheaper, around $7,000-50,000, and the review process is more flexible. An SPO can also help issuers develop their green bond framework. However, SPOs have a problem with standardization. Agencies that provide SPOs often use different methods of assessment, making a comparison across different providers difficult. Also, since SPO providers might be involved in developing the issuers' green bond framework, their claim of independence can be weak. Finally, an SPO often does not provide post-issuance monitoring of the green bond, unless the issuer requests it.

Certification is the second common practice, accounting for 17% of green bonds. The certification process is stricter and less flexible than that of SPOs. For example, the CBI has constructed not only the CBS but also detailed sector criteria for eligible

green projects. The CBI also will conduct post-issuance monitoring of the green bond. If the green bond does not meet the reporting requirement of the CBS, the CBI will withdraw the certification label. The certification fee is also more expensive than an SPO, around 1/10th of a basis point of the bond principal.

Assurance is the third common type of external review, which accounting for 2% of green bonds. Assurance is normally conducted by audit firms and is often based on ISAE 3000 and standards provided by the issuer. Although the report of assurance has a formalized statement, it usually focuses more on the financial allocations to green projects and lacks an assessment of the environmental impact. Finally, scoring and rating is the least common type of external review. The unique feature of scoring and rating is that it attempts to provide a quantitative score with a range rather than a binary outcome. Scoring and rating is relatively expensive compared to other types of external review, and it does not cover post-issuance monitoring.

Table 4.7 provides a comparison of four types of external review. Certification is the most rigorous, with a standardized methodology, independent review procedure, and the competence of conducting an environmental assessment on a project. It is also the only type that always requires post-issuance monitoring. For assurance, its weakness is that the audit agencies usually do not have professional experts who can evaluate the environmental impacts of a project. For SPO and rating, their shortcoming is that their methodologies of review are not standardized. In addition, they do not maintain strict independence from issuers during the review process.

Table 4. 7 Comparison of External Review

Types of review	Standardization	Post-issuance monitor	Independence	Environmental assessment
Assurance	Medium	Some cases	Strong	Weak
Second Party Opinion	Low	Some cases	Weak	Medium
Scoring & Rating	Low	No	Weak	Medium
Certification	High	Yes	Strong	Strong

Source: Author's compilation

Although the issuance of green bonds involves additional external review, the cost of issuing is not necessarily higher than other vanilla bonds. The CBI's survey found that 48% of their sample think that the cost of funding green bonds was similar to that of non-green equivalents, and 42% think the cost of issuing green bonds is lower than ordinary bonds (Almeida et al., 2019).

On the investors' side, institutional investors such as pension funds and insurance companies are the main buyers of green bonds. Green bonds are attractive to institutional investors not only because they are long-term and low-risk investments, but also because they meet investors' need for signaling sustainability strategy and commitments. The CBI's studies found that around 56% of green bonds are sold to investors with an explicit green mandate (Harrison, 2021; Harrison et al., 2020).

Investors usually have higher disclosure expectations of green bonds. The CBI's survey shows that investors want more information on the use of proceeds, post-issuance transparency, and the green bond framework (Harrison, 2021; Harrison et al., 2020). If investors find that a green bond's post-issuance reporting is poor, they are more likely to sell it (Almeida et al., 2019).

Since the demand for green bonds continues to be higher than the supply, some green bonds have low funding costs. Recent studies have started to examine whether

green bonds have advantages on yield to an equivalent conventional or brown bond issued by the same issuer. Several studies found that green bonds enjoy a "greenium," meaning there is a yield discount for a green bond (Baker et al., 2018; Gianfrate & Peri, 2019; Hachenberg & Schiereck, 2018; MacAskill et al., 2021; Nanayakkara & Colombage, 2019). Other studies, however, suggest the evidence for "a greenium" is not conclusive (Karpf & Mandel, 2017; Larcker & Watts, 2020; Partridge & Medda, 2020). The mixed findings may result from their use of different methodologies and sample selection (Liaw, 2020).

Issuing Green Bonds in China

Green Bond Issuers

In China, not all bonds aligned with climate projects have green labels. Some bonds might belong to sectors that associate with green projects but do not use green labels during their issuance. The international institute of green finance (IIGF), CUFE, estimated that there are 2250 non-labeled green bonds in China between 2009 and 2019, and its total scale is 2.3 times larger than the total scale of labeled green bonds (IIGF, 2020). However, the non-labeled green bonds suffer from a lack of environmental disclosure. It is sometimes unclear whether they have positive environmental impacts.

Why do some Chinese firms choose to issue labeled green bonds? There are several general reasons across sectors. The most common is that firms believe issuing green bonds can enhance their reputation. They send signals to investors that the firm has strategies for the future trend of low carbon use. For example, some coal-related firms

issue green bonds to prove to investors that they have changed.[39] Some firms also believe that a green bond can improve their brand, making it easier to start a new business direction on green projects or participate in global markets. For instance, a senior manager in the green finance department of Industrial Bank noted that issuing green bonds helps build the capacity to participate in global financial markets (Sustainalytics, 2022). According to the CBI's global survey, reputation benefits are the top motivation for issuing green bonds (Harrison et al., 2020). Regarding this motivation, Chinese green bond issuers are not different from other green bond issuers.

Secondly, some firms issue green bonds expecting that they can receive policy support such as subsidies or tax credits.[40] A study by SynTao Green Finance found that the strength of local governments' green finance policies is positively associated with the number and scale of green bond issuance across provinces between 2016 and 2019 (SynTao Green Finance, 2020). The study suggests that governments' policies could have affected Chinese firms' decisions on green bond issuance.

Thirdly, for some firms, issuing green bonds can be a cheaper way to borrow money. Some studies suggest green bonds cost less to issue than regular bonds in China (Deng et al., 2020). However, issuing green bonds includes additional costs, such as the fee for third-party verification, which can drive up the coupon rate. For instance, a study from the China International Capital Corporation Limited (CICC) in 2021 found that more than 70% of green bonds have higher coupon rates than comparable regular bonds (CICC, 2021). In other words, green bonds might not always be a cheaper tool for firms.

[39] Interview with expert at CCXI Credit Rating Co. Ltd., Beijing, 08/9/2019.
[40] Interview with expert at IIGF, CUFE, Beijing, 08/12/2019.

Yet, for the firms which have urgent or large needs for money, green bonds are an available channel of borrowing.[41] Even though the cost of issuing green bonds is not always less, it is sometimes better than not raising money at all.

Finally, through issuing green bonds, firms hope to signal their support for the government's policy agenda. Even though issuing green bonds might not generate direct profits for firms, some firms believe issuing green bonds can improve their relationship with the government, which is the necessary condition for doing business in China.[42] For leaders of state-owned enterprises and banks, demonstrating support for the government's policy agenda could become political capital for their promotion.[43]

Underwriters

Underwriters play critical roles in issuing green bonds in China. According to the CSRC, there were 140 securities companies in China in August 2021 (CSRC, 2021). They are eligible to issue corporate bonds or ABS in the exchange market. Since 2017, banks have also become underwriters for corporate bonds. However, only qualified financial institutions are eligible to issue financial bonds, enterprise bonds, midterm notes, and short-term commercial paper (Table 4.8).

[41] Interview with expert at CCXI Credit Rating Co. Ltd., Beijing, 08/9/2019
[42] Interview with expert at IIGF, CUFE, Beijing, 08/12/2019
[43] Interview with manager at Everbright Securities, online, 04/06/2021

Table 4. 8 Qualification of Underwriters

Type of bond	Issuance location	Underwriter	Qualification	Regulator
Corporate bond	Exchange market	Securities company	Securities company with a license for underwriting	CSRC
Financial bond	Interbank market	Financial institutions	(1) Registered capital of no less than RMB 200 million yuan; (2) relatively strong capabilities in distributing bonds; (3) qualified professionals engaging in the bond market business and bond distribution channels; (4) no serious illicit acts within the most recent two years; (5) other conditions as required by the People's Bank of China.	PBoC
Enterprise bond	Interbank market	Financial institutions	Service as lead underwriter of an enterprise bond since 2000 or service as vice lead underwriter three times	NDRC
Midterm notes Short-term commercial paper	Interbank market	Financial institutions	Class A lead underwriters can do business at the national level, while Class B lead underwriters can do business only at the provincial level	NAFMII

Source: Author's compilation

Beginning in 2016, the Securities Association of China announced a green billboard (綠色公益榜) annually to praise underwriters who actively participate in the issuance of green corporate bonds or green ABS. To gain reputation, more and more underwriters are interested in green bonds. According to the statistics of the Securities Association of China, only 13 underwriters participated in the issuance of green corporate bonds or green ABS in 2016. The number increased to 42, around 36% of all underwriters, by 2019 (SAC, 2020).

When firms decide to issue green bonds, their financial departments will look for underwriters. Meanwhile, underwriters also search for potential issuers. A bond is usually managed by several underwriters. One underwriter will serve as the lead and

coordinate other joint underwriters. Underwriters will set up a division of labor and work together. Beyond cooperation, underwriters still need to compete. If they can deliver an impressive performance to the issuer, they might get other business in the future.[44] During the issuing process, underwriters help bond issuers prepare the prospectus to meet regulatory agencies' requirements. Underwriters need to contact law firms, credit rating agencies, and a third-party certification agency.

Underwriters are also responsible for selling the bond and helping bond issuers find suitable investors. Underwriters are eager to invent new ways to advertise bonds. For example, they seek to frame their products as "the first," such as the first green bond, or use popular labels such as "carbon neutral."[45] By using innovative or popular labels, underwriters are more likely to gain attention and reputation among market actors. After the bond is issued, underwriters will monitor the bond, assuring it pays interests on time. The process of issuing a bond usually takes 6 months to 1 year, and underwriters could charge a fee between one and ten million RMB depending on cases.

Certification Agencies

The certification agency is the most crucial actor to evaluate whether a green bond is green. According to GBP's typology, there are four types of external review: third-party assurance, second party opinion, green bond rating, and pre-issuance verification of the Climate Bonds Certification. Although most certification agencies

[44] Interview with manager at Minsheng Securities, Beijing, 08/01/2019.
[45] Interview with manager at Everbright Securities, online, 04/06/2021.

in China use the term "third-party certification" to describe what they are doing, most of their work, according to GBP's typology, belongs to "third-party assurance" or "second party opinion."

In China, the demand for external review leads to a competitive market, and there are more than ten certification agencies. Unlike rating agencies, certification agencies do not need licenses to enter the market. Thus, the background of certification agencies varies. Certification agencies now include accounting firms, environmental services agencies, sustainable finance consultancies, credit rating companies, and research institutes. Although there are many certification agencies, the "big four" accounting firms (KPMG, EY, PwC, and Deloitte) dominate the market, accounting for 59% of all bonds with verification by amount (Escalante et al., 2020a). Big certification agencies usually have closer relationships with underwriters and credit rating agencies, so they can leverage these networks to target firms that have the potential to issue green bonds. Since firms do not change credit rating agencies very often, they are likely to work with certification agencies related to their credit rating agency.[46] Many have complained that the competition between certification agencies has become cutthroat. The big certification agencies can give green bond issuers a very low price for certification, and sometimes even charge nothing for certification.[47] Although the PBoC and CSRC released Guidelines on the Evaluation and Certification of Green Bonds, many think the guideline will affect only new entrants rather than existing big companies.

[46] Interview with Consulting Director at SynTao Green Finance, Beijing, 07/17/2018

[47] Interview with expert at IIGF, CUFE, Beijing, 08/19/2019; interview with expert at CECEP Consulting Co. Ltd., Beijing, 08/15/2019; interview with expert at IIGF, CUFE, Beijing, 08/07/2019.

To evaluate a project, a certification agency reviews the environmental assessment of the project, conducts on-site interviews and due diligence, and interviews several departments of the issuer. Most of the materials are provided by the issuer. Sometimes the issuers might provide inconsistent information.[48] The certification process usually takes one to two months, and the fee is around ten thousand RMB. The certification agency provides a report for the issuer, and the issuer submits the report to the exchange. The exchange sometimes publishes the report, but sometimes it does not, especially for private placement bonds. The most popular dataset, the Wind database, does not include certification reports either. Many investors are not interested in the content of reports but only care that the certification is done. After the third-party certification, it usually takes 3 to 6 months for the green bond to be approved by regulators. The certification agency then provides follow-up reports to trace whether the money goes to the designated project. It might also conduct on-site interviews. Post-issuance monitoring usually takes two to three months. Some certification agencies admit that it is difficult to monitor whether the project produces negative environmental outcomes after the bond issuance.

Although China has standards for identifying green bonds, there is no unified methodology among certification agencies to determine whether a bond meets the standards. Some certification agencies are trying to develop methodologies. Since other certification agencies can simply choose to free ride, however, the innovators of methodologies tend to become passive. [49]Also, many certification agencies do not have

[48] Interview with Consulting Director at SynTao Green Finance, Beijing, 07/17/2018
[49] Interview with expert at CECEP Consulting Co. Ltd., Beijing, 08/15/2019

enough experts to develop a proper methodology. Furthermore, the methodologies used by certification agencies are not transparent, making the reports of certification incomparable. Most certification agencies do not publish their reports because it is not required by regulators.

When certification agencies evaluate a green bond, they seldom use the "Climate Bonds Standard," and most of them follow the regulators' standards in the region where the green bond will be issued. According to an expert who has used the Climate Bonds Standard, the CBS is more demanding and less efficient. He needed to provide more information to the CBI, and the process took longer. Similar to some global actors' concerns (Harrison et al., 2020), he worries that stringent standards could discourage issuers from entering the green bond market, and he thinks China should expand the domestic green bond market first rather than promoting stringent CBS. Some experts are also skeptical about the technical details of the CBS. For example, an expert disagreed with the taxonomy based on sector, and he argued that wind power projects in China are not necessarily green.[50]

Even though the market of certification has become very competitive, green bond issuers usually get positive evaluations from Chinese certification agencies. Few green bonds are evaluated as "not green" or "not green enough." The certification fee comes from green bond issuers and certification agencies are unwilling to embarrass their customer.[51] Some certification agencies will refuse ineligible or controversial projects in the first place because backing the controversial project could hurt their global

[50] Interview with expert at CECEP Consulting Co. Ltd., Beijing, 08/15/2019
[51] Interview with expert at CCXI Credit Rating Co. Ltd., Beijing, 08/9/2019

reputation.[52] Because of the customer-client relationship and selection bias, we seldom see Chinese green bonds with terrible verification records.

Moreover, the distinction between second-opinion and third-party certification is not clear in China. Although some firms are willing to issue green bonds, they do not know how to do it. Thus, certification agencies play the role of consulting and capacity building, helping the green bond issuers improve the quality of their projects. For example, a certification agency said that it holds a 100-person seminar for green bond issuers to teach their employers what green bonds are.[53]

The above analysis provides two important implications for this research. First, the case of China indicates that the general framework for CER research needs to adjust to unique conditions in emerging economies. Although the green bond issuance process in China shares features with global practices, the infrastructure of the green bond market in China has several problems. For instance, the influence of domestic ethical investors is weak, information from external review is not transparent, and the distinction between SPO and third-party certification is unclear. In other words, some factors in the general framework for CER might not be relevant in emerging markets.

Secondly, the case of China provides evidence for the model set forth in this dissertation. Chinese green bond issuers are rational actors who can calculate the costs and benefits of issuing green bonds. Some of them choose to issue green bonds because it is a cheaper way to raise money compared to other channels. Others choose to issue green bonds as a marketing strategy. Moreover, Chinese green bond issuers care very

[52] Interview with Consulting Director at SynTao Green Finance, Beijing, 07/17/2018
[53] Interview with expert at CCXI Credit Rating Co. Ltd., Beijing, 08/9/2019

much about domestic regulatory agencies' preferences. They issue green bonds to improve their relationships with the major regulatory agencies.

Chinese Firms' Compliance with Global Standards

Based on the model in Chapter 3, several hypotheses can be generated and tested empirically regarding the green bonds in China.

Preferences of the Regulatory Agencies

Existing scholarship has found that the government is the dominant stakeholder driving corporate environmental behavior (Beeson, 2010; He et al., 2016; Liu, Yu, et al., 2010; Marquis & Qian, 2013). However, according to my model, the government is not a unitary actor, and regulatory agencies might not encourage corporate environmental behavior to the same degree (Qi et al., 2008). In the case of green bonds, when the regulatory agency (i.e., the NDRC), does not encourage green bond issuers to comply with global standards for green bonds, firms are unable to gain the reputational benefit from the regulatory agency. Thus, green bond issuers are more likely to choose a lower level of compliance with the Climate Bonds Standard.

H1: When the domestic regulatory agency does not encourage compliance with global standards of green bonds, Chinese green bond

issuers are more likely to choose a lower level of compliance with the Climate Bonds Standard

Political Connections of the Firm

The model predicts that a closer government-business relationship will make issuing firms more likely to comply with global environmental standards. The regulator-business relationship can be captured by firms' political ties. In China, members of large firms often have political connections, such as holding political positions in the National People's Congress (NPC), the Chinese People's Political Consultative Conference (CPPCC) or serving in the local governments. Existing studies have found that political connections could not only bring material benefits to Chinese firms (Hung et al., 2017; Li et al., 2006; Li & Zhang, 2007; Peng & Luo, 2000; Wu et al., 2008) but also drive Chinese firms' CSR or CER practices (Marquis & Qian, 2013; Z. Wang et al., 2018; Yin, 2017). Therefore, this research expects:

H2A: Chinese green bond issuers who have more political connections will be more likely to choose a higher level of compliance with the Climate Bonds Standard

Also, the ownership structure of the firm can capture the government-business relationship to some degree. In China, state-owned enterprises have a closer government-business relationship than private companies. Furthermore, central state-

owned enterprises (央企)[54] usually have a closer relationship with powerful regulators than local state-owned enterprises. The close government-business relationship allows central state-owned enterprises to accumulate more political resources, which makes central state-owned enterprises more willing to adopt riskier strategies, such as corporate environmental responsibility.

Indeed, previous studies have found that state-owned enterprises are more likely to disclose environmental information in China (Li et al., 2013; Zeng et al., 2012). Moreover, Li & Chan (2016) found that the largest state-owned enterprises have the best environmental performance among all SOEs in China[55]. According to SASAC's 2017 report on the CSR of central SOEs, the average CSR index scores of central SOEs was higher among Chinese companies compared to local SOEs or private firms (SASAC, 2018). Based on these studies, I argue that the central state-owned enterprises can usually receive more resources by having a closer relationship with political leaders than local state-owned enterprises or private firms. With these resources, central SOEs can bear the costs of complying with global standards. Thus, the central state-owned enterprises are more willing to adopt higher compliance with the CBS. This study, therefore, hypothesizes the following:

[54] Central state-owned enterprises are owned by the central government and managed by the State-Owned Assets Supervision and Administration Commission (SASAC).

[55] Although one study found that central SOEs and their local subsidiaries were involved in 2,370 instances of non-compliance with environmental regulations between 2004 and 2016 (Eaton & Kostka, 2017), this study did not compare the environmental performance of different types of Chinese companies. Thus, it is not clear whether central SOEs are more likely to violate environmental regulations than other firms.

H2B: Chinese green bond issuers that are central state-owned enterprises will be more likely to choose a higher level of compliance with the Climate Bonds Standard

Firm's Western Linkages

The presence of Western linkages is another type of tie influencing compliance of firms with the CBS. Green bond issuers in China with more Western linkages, may put more weight on achieving the reputational benefits of Western stakeholders, such as investors, consumers, or activists. Accordingly, they will have a stronger incentive to comply with the CBS. Hence, hypothesis 3 can be described as follows.

H3: Chinese green bond issuers with more Western linkages will be more likely to choose a higher level of compliance with the Climate Bonds Standard

Moderating Effect

The model suggests the existence of a moderating effect of Western linkages. Although Chinese firms usually put more weight on domestic regulatory agencies' preferences, they will pay more attention to Western stakeholders when they have more Western linkages. When the regulatory agency does not encourage compliance with global standards of green bonds, firms with more Western linkages will still be

encouraged to gain reputational benefits from Western stakeholders. In this situation, the influence of regulatory agencies will be weakened by the effect of Western linkage. Therefore, I propose the following hypothesis 4.

> *H4: When the regulatory agency does not encourage compliance with global standards of green bonds, Chinese green bond issuers with more Western linkages will be more likely to choose a higher level of compliance with the Climate Bonds Standard*

Firm Characteristics

This study argues that the compliance of firms with global standards is mainly determined by domestic regulation and the firms' networks. According to the institutional theory, firms' characteristics can also account for their compliance outcomes. First, a previous study on Chinese companies has found that large firms in China are more likely to practice corporate environmental responsibility (CER) (Lu & Abeysekera, 2014; Luethge & Guohong Han, 2012; Marquis et al., 2011; Zeng et al., 2010; Zheng & Zhang, 2016; Zhu & Geng, 2001). Since large firms could have more resources or be subjected to increased public pressure, they might have a stronger incentive to obtain a third-party certification or follow global environmental standards voluntarily (Boesso & Kumar, 2007; Patten, 2002b)

Second, firms with better financial status (e.g., financial performance and cash flows) may have a stronger capacity to manage costly CER programs (Brammer &

Pavelin, 2008; Karim et al., 2006; Li et al., 2013; Lu & Abeysekera, 2014; Marquis & Qian, 2013; Seifert et al., 2004; Zu & Song, 2009). Third, the historical environmental performance of a firm could also drive its compliance level (Marquis et al., 2016). If the firm had bad historical environmental performance or encountered higher pressure from domestic activism, it will have higher incentive to use global standards as a commitment device. Complying with global standards becomes the solution for the firms to improve their reputation from domestic investors.

Finally, firms being pressured by industrial competitors or peers may improve their environmental performance to maintain their competitive niches (Liu et al., 2010; Zeng et al., 2012). As with mimetic isomorphism from the institutional theory, firms might choose to follow or ‘‘mimic’’ the actions of successful competitors in the sector (DiMaggio & Powell, 1983). In the context of green bonds, when more issuers in a sector choose to comply with the CBI, the peer pressure might drive remaining issuers to comply as well.

Methodology

Sample and Data

This dissertation seeks to understand how local green bond issuers respond to global standards of green bonds. Therefore, it mainly targets the Chinese green bonds issued on the onshore market (82% of the total). To test the hypotheses, I collected data on green-labeled bonds in China between 2016 and 2018. Data sources include archival data from the Wind database, the Bloomberg Terminal, the Climate Bond

Initiative's green bond database, and the firms' prospectus of green bonds. After combining these databases and removing observations with missing values, I had a sample of 224 observations. The detail of sample selection is described in Appendix 4.

Dependent Variable

The dependent variable is the firms' compliance with the Climate Bonds Standard. I used two dimensions to construct the dependent variable, *compliance*. The first dimension is whether the Chinese green bond meets the CBI's green bond definition (data from the CBI). The second dimension is whether the green bond uses domestic third-party certification (data from the Wind database). The two dimensions create four types of compliance (Table 4.9), where Type 4 is the highest level of compliance, and Type 1 is the lowest. Type 3 and Type 2 are combined and coded as the average level of compliance.

Table 4. 9 Dimensions of the Dependent Variable

	Domestic third-party certification		
Meet the CBI's definition	No (0)	Yes (1)	Total
No (0)	Type 1 47 (20.98%)	Type 2 68 (30.36%)	115 (51.34%)
Yes (1)	Type 3 11 (4.91%)	Type 4 98 (43.75%)	109 (48.66%)
Total	58 (25.89%)	166 (74.11%)	224 (100%)

Independent Variables

One of the main independent variables is the preference of domestic regulatory agencies. As noted in the discussion of green bonds in China, the NDRC and the PBoC have different priorities for compliance with global standards of green bond. Accordingly, I created a dummy variable *regulation* where the value1 refers to a green bond belonging to an enterprise bond and 0 otherwise.

To capture regulator-business relationship, the model includes the variable *political ties*. I measured the political connections as the number of board of directors, board of supervisors, and managers that have worked in the government. The detail of coding rule is described in Appendix 4. I also used the firms' ownership structure to measure regulator-business relationships. I created a second dummy variable, *central state-owned*, equal to 1 if the green bond issuer was a central state-owned enterprise and 0 otherwise.

The other independent variable is the number of Western linkages of the firm. I measured the Western linkage by counting the number of board of directors (1) who hold a Western educational degree, (2) who have working experience in Western firms, or (3) who are citizens in Western countries. The data come from the prospectus of Chinese green bonds.

Control Variables

The models include several institutional, sector, firm, and bond level controls, which may affect the firms' compliance with the CBI's standard. The data come from the Wind database and the Bloomberg terminal.

To control the effect of the fragmented bond market in China, I created a dummy variable, *location*, equal to 1 if the green bond was issued in the Interbank Bond Market and 0 in the Exchange Bond Market. The model also includes a variable, *competition*, to capture the mimetic pressure in a sector. This variable is constructed by counting how many green bond issuers in a sector meet the CBI's definition. Also, the model controls the dummy variables sector and year for a potential sectorial and temporal effect.

The model controls several variables of firm characteristics. Issuers with increased staff and financial resources may have stronger ability to comply with the CBI's standard. Therefore, I control *firm size*, which is measured by the natural log of a firm's total assets, and *firm ROE*, which is the natural log of a firm's net income over shareholders' equity[56]. *Firm age* is the difference between the green bond's issuing year and the firm's year of establishment. *Issuer rating* is the log-transformed rating of green bond issuers, which is published by rating agencies. *ESG 2016* is the green bond issuer's 2016 ESG score in the Bloomberg terminal. *Listed* is a dummy variable equals to 1 if the green bond issuer is a listed company.

[56] Based on existing literature (Li & Zhang, 2010), this study used ROE to measure firms' financial performance. Alternative measurements include return of sale (ROS) and return of asset (ROA). However, this study does not have complete data for these indicators for now. I hope to test these alternative measurements when I have the access to Wind database in the future.

Finally, bond with particular features may be more likely to comply with the CBS. Based on the existing quantitative studies of green bond performance (Dorfleitner et al., 2021; Russo et al., 2021), I control some features of green bonds, including *coupon rate, scale, maturity*, and *bond rating*. All variables are log-transformed.

Regression Model

The dependent variable is ordinal. Thus, this study used an ordered logistic regression model for a sample of 224 green bonds. In the analysis, I report cluster-adjusted and heteroscedasticity-robust standard errors for multiple observations per firm and for any potential heteroscedasticity. This study estimated the following regression models:

$$Compliance = \beta_0 + \beta_1 Reg + \beta_2 W + \beta_3 PC + \beta_4 Reg * W$$
$$+\beta_5 Control + \beta_6 Sector + \beta_7 Year + \varepsilon$$

where the dependent variable reflects firms' compliance with the CBS. The dependent variables are preferences of the regulatory agencies (Reg), Western linkages (W), and political connections (PC)., The model also estimates the interaction term between regulatory agencies' preferences and Western linkages. In addition, the model includes a group of control variables, sector dummies, and year dummies.

Results

Descriptive Statistics

Table 4.10 presents the descriptive statistics for each of my variables. To check for a potential multicollinearity problem among the variables, I calculated variance inflation factors (VIFs). The maximum VIF was 2.57 (*scale*), and the mean VIF was 1.81, both below the cutoff of 5.3 (Hair et al., 1992) and 10 (Ryan 1997). Therefore, multicollinearity should not significantly affect my results.

Table 4. 10 Descriptive Statistics

	(1) N	(2) Mean	(3) SD	(4) Min	(5) Max
Compliance	224	2.228	0.773	1	3
Regulation	224	0.183	0.388	0	1
Location	224	0.799	0.402	0	1
Competition	224	0.478	0.208	0	1
Western linkage	224	1.402	1.894	0	9
Political ties	224	4.112	3.075	0	11
Central state-owned	224	0.259	0.439	0	1
ESG 2016	224	7.278	12.43	0	48.35
Firm age	224	20.06	9.786	5	71
Listed	224	0.379	0.486	0	1
Firm size	224	7.061	2.201	0	12.48
Firm ROE	224	2.103	0.779	-0.631	3.311
Issuer rating	224	1.499	0.473	0	1.792
Scale	224	2.633	1.025	0.693	5.707
Maturity	224	1.388	0.463	-0.752	2.708
Bond rating	224	1.560	0.437	0	1.792
Coupon rate	224	1.735	0.210	0	2.140

Hypothesized Results

Table 4.11 presents the results of ordered logistic regression models that I used to examine the relationship between Chinese green bond issuers' compliance with the

CBS and independent variables. Model 1 included only the institutional-level variables (i.e., *regulation*, *location*, and *competition*), while Model 2 only included the firm-level variables. Model 3 is the full model which covers institutional-level, firm-level, and bond-level variables. Model 4 is the full model with the interaction term between *regulation* and *Western linkages*.

Table 4. 11 Estimates from Ordered Logistic Regression

	Model 1	Model 2	Model 3	Model 4
Regulation	-5.35968***		-7.36187***	-8.24216***
	(0.830)		(0.993)	(1.287)
Location	1.13505*		2.36202***	2.39807***
	(0.583)		(0.649)	(0.636)
Competition	4.74044***	1.81371	1.99698	2.07112
	(1.810)	(1.348)	(1.425)	(1.474)
Western linkage		0.43900***	0.45060***	0.36444***
		(0.126)	(0.144)	(0.140)
Western linkage* Regulation				0.49239*
				(0.252)
Central state-owned		1.33162**	1.83082***	1.85025***
		(0.544)	(0.673)	(0.692)
Political ties		0.22243**	0.24263**	0.24823**
		(0.091)	(0.104)	(0.105)
Firm age		-0.02760	-0.05612***	-0.05718***
		(0.020)	(0.021)	(0.021)
Firm ROE		0.40756	0.38915	0.33220
		(0.284)	(0.340)	(0.350)
Listed		-0.15892	0.05679	0.10052
		(0.465)	(0.526)	(0.523)
Firm size		0.11892	0.03875	0.03878
		(0.086)	(0.092)	(0.093)
ESG 2016		0.01434	0.01393	0.01446
		(0.018)	(0.018)	(0.018)
Issuer rating		-3.38838***	-3.81319***	-4.11873**
		(1.222)	(1.294)	(1.617)
Bond rating		4.22298***	4.91025***	5.18160***
		(1.286)	(1.348)	(1.669)
Scale		-1.02509***	-0.72949**	-0.71167**
		(0.281)	(0.321)	(0.319)
Maturity		-1.75457***	0.35362	0.37797
		(0.605)	(0.622)	(0.642)
Couponrate		-2.35584**	-1.56671	-1.25628
		(1.117)	(1.358)	(1.243)
Year dummies	Yes	Yes	Yes	Yes

Sector dummies	Yes	Yes	Yes	Yes
Constant cut1	1.04887	-5.96134**	-0.17806	0.09332
	(1.525)	(2.455)	(2.883)	(2.723)
Constant cut2	3.81208**	-3.49547	3.36858	3.69262
	(1.561)	(2.453)	(2.883)	(2.735)
Observations	224	224	224	224
Pseudo R2	0.299	0.258	0.438	0.444
Wald chi2		80.43	94.44	84.37
Log pseudo likelihood	-165.90	-175.70	-133.10	-131.60

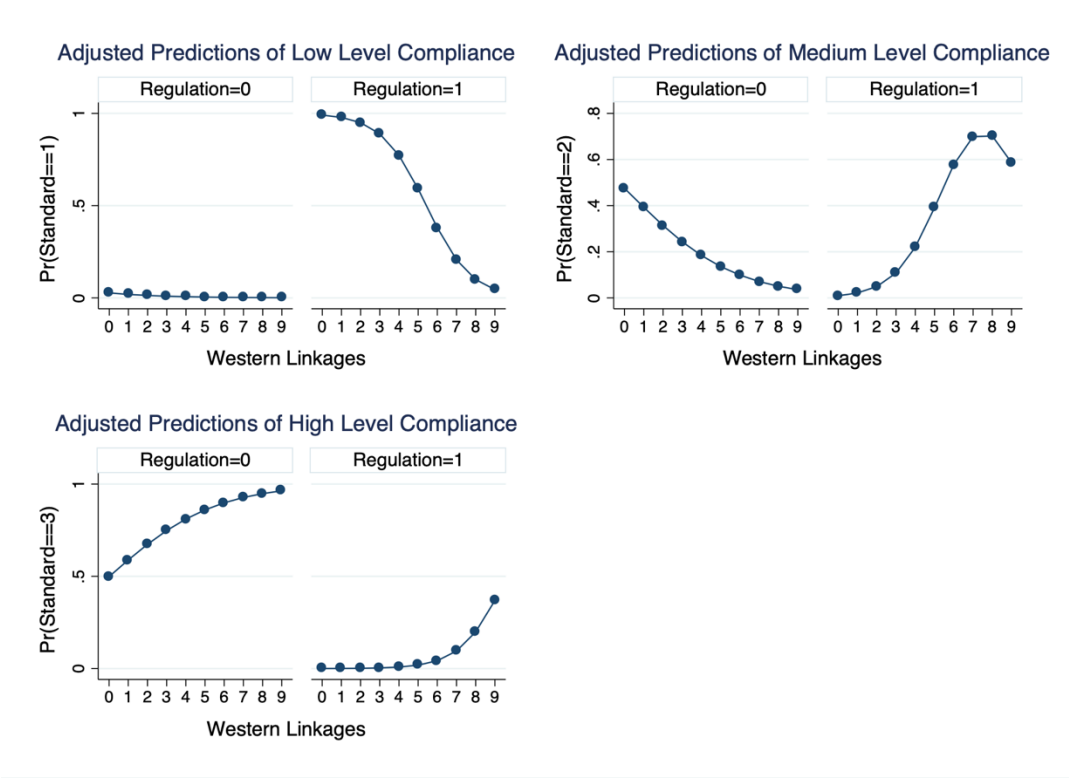
Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Model 1, Model 3, and Model 4 all reported negative and statistically significant associations between regulatory agencies' preferences and firms' compliance with the CBS. This result supports Hypothesis 1. Hypothesis 2A and 2B state that firms with closer government-business relationships are more likely to comply with the CBS. In Model 3, the coefficients of *central state-owned* and *political ties* are both positive and statistically significant, supporting Hypothesis 2A and 2B. Hypothesis 3 predicts that firms with more Western linkages are more likely to comply with the CBS. In Model 3, the coefficient of *Western linkage* is positively related to the dependent variable, supporting Hypothesis 3. Hypothesis 4 predicts that Western linkages could moderate the effect of regulation on the firms' compliance with the CBS. In Model 4, the interaction term between *Western linkage* and *regulation* is positive and statistically significant, supporting Hypothesis 4.

Figure 4.6 shows the probabilities predicted for three compliance outcomes from Model 4, allowing *Western linkage* and *regulation* to change while setting all other variables at their mean values. The results are consistent with Hypothesis 4. Firstly, when the regulatory agency does not encourage compliance (regulation=1; low-level compliance) with global standards, the probability of the firms' low-level

compliance will be about one. However, this probability will reduce when the firm's Western linkages increase. Also, when the regulatory agencies encourage compliance (regulation=0), the probability of low-level compliance becomes very low.

Figure 4. 6 Predicted Probabilities



Secondly, when the regulatory agency does not encourage compliance (regulation=1, medium-level compliance) with global standards, the probability of firms' medium-level compliance will be lower than when regulatory agencies encourage compliance (regulation=0). Still, the probability will increase with increased Western linkages of the firm, and the highest probability would be approximately 70%. In contrast, when the regulatory agencies encourage compliance (regulation=0), the probability of medium-level compliance will reduce when the firm has more Western

linkages. This is probably because such a firm is more likely to choose high-level compliance. Finally, the probability of high-level compliance will increase when a firm has more Western linkages. When the regulatory agencies encourage compliance (regulation=0), the highest probability is near 100%. However, the probability will be much lower if the regulatory agency does not encourage compliance (regulation=1), and the highest probability is even lower than 50%.

The control variables in the models also show relevant findings. First, regarding firm characteristics, the older the firm, the more likely it will be to choose a lower level of compliance with global standards. It is possible that older firms could have a greater "socialist imprint", which does not embrace the change caused by global standards (Marquis & Qian, 2013). Also, issuers with higher ratings are more likely to choose a lower level of compliance. This might indicate that the issuers with higher ratings could attract traditional investors by their past business performance, so they do not need to rely on high-level compliance to satisfy stakeholders. Regarding bond-level features, when green bonds' rating is higher, the issuers are more likely to choose a higher level of compliance. The reason might be that these issuers have more capacities to comply with global standards. It might also be possible that the traditional rating agencies have considered the external review as a relevant indicator of bond rating. This finding suggests both traditional bond rating and external review are important elements for advertising a green bond, and this echoes the findings that both contribute to green bond premium (Dorfleitner et al., 2021; Russo et al., 2021).

Robustness Checks

A crucial assumption of the ordered logistic regression is the proportional odds assumption or the parallel regression assumption, which assumes that the coefficient between each logistic regression is the same, differing only in their intercepts. To test this assumption, the Brant and the Wald Test were performed for the main models. The results show insignificant chi-square values, which fail to reject the null hypothesis that there is no difference in the coefficients between models. It suggests the parallel regression assumption was likely not violated.

To check the robustness of my result, I first tried a different measure for my dependent variable, which only focuses on the CBI's definition of green bonds. I created the dummy variable *cbi* equal to 1 if the Chinese green bond met the CBI's definition and 0 otherwise. Since the dependent variable is a dummy variable, I used a logistic regression model. The result is reported in Appendix 4, and all of my hypotheses are supported.

In addition, since the data have a nested structure, I also used a multilevel ordered logistic regression to investigate whether the level-two variables can explain any variation in the dependent variable (Appendix 5). I have treated *sector* and *use of the proceeds* as the level-two variables. However, the result suggests the variance of the random intercept at the sector level or use-of-the-proceeds level is approximately zero, which means that the multilevel model is similar to the single-level model. The multilevel model was not significant, probably due to the small sample size for each group.

Conclusion

By comparing the global practice of issuing green bonds with the practice in China, this chapter indicates that the market infrastructure for green bonds, such as the operation of external review agencies, is not the same in emerging markets as in advanced economies. Thus, the general framework for CER research should be modified to fit the context of emerging economies. Also, the case of China supports the main assumptions of the framework: green bond issuers are rational and relational actors who pay close attention to regulatory agencies' preferences.

This chapter empirically tests the hypotheses developed in Chapter 3 through a unique dataset of Chinese green bonds between 2016 and 2018. The results show that when the regulatory agency does not encourage green bond issuers to comply with global green bond standards, Chinese green bond issuers are more likely to choose a lower level of compliance with the Climate Bonds Standard. In addition, Chinese green bond issuers who are central state-owned enterprises, have more political ties, or more extent of Western linkages will be more likely to choose higher level of compliance with the Climate Bonds Standard. Finally, the analysis indicates that when the regulatory agency does not encourage compliance with global standards of green bonds, Chinese green bond issuers with more Western linkages will be more likely to choose a medium level of compliance with the Climate Bonds Standard.

Chapter 5: Case Studies: Issuance of Green Bonds in China

Introduction

This dissertation has provided quantitative evidence to support the thesis that the variation in Chinese firms' compliance with global green bond standards is driven by three factors: regulatory agencies' preferences, firms' ties, and firm characteristics. To further investigate the assumptions and mechanisms under my hypotheses, this chapter provides qualitative evidence through case studies of green bond issuance in China. The data in this chapter is drawn from documents, news reports, interviews, participant observation, and secondary literature.

Case Studies of Chinese Green Bond Issuers

This section focuses on Chinese green bond issuers and how they support the main hypotheses of this study: firms' compliance outcomes are determined by regulatory agencies' preferences, firms' ties, and firm characteristics. Specifically, this section will discuss three Chinese firms: Wuhan Metro Group, Jiangsu Financial Leasing, and BAIC Motor Corporation. Wuhan Metro Group is selected as a typical case: both the dependent variable and independent variable vary in this case. Jiangsu Financial Leasing is selected because it is a case with extreme Y: it is the only domestic green bond with CBI certification. Finally, BAIC Motor Corporation is selected

because it is a deviant case. It issued a green enterprise bond with medium-level compliance, which is uncommon for this type of green bond.

The Effect of Regulation

The Wuhan Metro Group is a state holding company. In 2007, the State-owned Assets Supervision and Administration Commission (SASAC) of Wuhan City became the largest shareholder of Wuhan City Rail Transit, and it changed the company's name to Metro Group. Since 2018, the SASAC of Wuhan City controlled 80.22% of total shares, and the second-largest shareholder was the China Development Bank (CDB) Development Fund, which controlled 94%(Wuhan Metro, 2018a). The governance of Wuhan Metro Group includes a board of directors, a board of supervisors, and executive management. Most members of the board are selected by the SASAC of Wuhan City.

Since 2017, the Wuhan Metro had 11 metro construction projects which totaled around 162.3 billion RMB (Wuhan Metro, 2018a). Wuhan Metro's revenue mainly comes from rail transit, land development, and derivative businesses, and it also has received financial support from the Wuhan City government. Nonetheless, the Wuhan Metro started to have a negative cash flow in 2016 and needed to borrow money, actively searching for funding sources including bank loans, bonds, and financial leases (Wuhan Metro, 2017). Although bank loans account for the most significant proportion of Wuhan Metro's debt, borrowing money from banks requires more time and resources. Wuhan Metro also issues bonds because the cost is relatively less. Before

issuing green bonds, Wuhan Metro had issued five enterprise bonds, two midterm notes, and one offshore bond, which lead to a tremendous increase in long-term debt. Since Wuhan Metro is not a listed company, it is not eligible to issue corporate bonds.

Wuhan Metro was the first company to issue a green bond in Hubei Province. In October 2016, Wuhan Metro issued its first green midterm note, and the CDB was the lead underwriter. The innovative feature of this green midterm note was that the CDB provided specific funding to Wuhan Metro's projects, and the money from bond, loan, and fund was completely managed by the CDB (Wuhan Metro, 2016). Through this method, the risks from the three types of money were shared, and the leading role of the CDB made the firm's management more accountable. Because of this innovative design, the coupon rate of the green midterm note was very low at 3.35%, helping Wuhan Metro issue this green bond in a cheaper way. Wuhan Metro's first green midterm note was verified by China Bond Rating.

After 2016, Wuhan Metro issued several green bonds (Table 5.1). It issued enterprise bonds in 2017 and 2018, and midterm notes again in 2017 and 2018. Wuhan Metro became the largest green bond issuer among the other 15 green bond issuers from LGFVs in 2017 (Meng et al., 2018). Compared to regular bonds issued by Wuhan Metro, the cost of issuing green bonds, especially for midterm notes, is smaller.

Table 5. 1 Green bonds issued by Wuhan Metro, 2016-2018

ID	Year	Coupon rate	Type	Verification	CBI
131656048.IB	2016	3.35	Midterm note	Yes	Yes
131781001.IB	2017	4.78	Midterm note	Yes	Yes
1780243.IB	2017	4.99	Enterprise bond	No	No
1880061.IB	2018	5.29	Enterprise bond	No	No
1880165.IB	2018	5.09	Enterprise bond	No	No
131800014.IB	2018	4.62	Midterm note	Yes	Yes

Source: Author's compilation, from Wuhan Metro (2016, 2017, 2018a, 2018b)

To make a causal inference, we can compare green bonds issued by Wuhan Metro in the same year. The comparison follows three steps of reasoning. First, since most firm-level variables at Wuhan Metro did not change within a year, we can exclude them as the cause of different compliance outcomes. Second, in the years 2017 and 2018, none of Wuhan Metro's enterprise bonds had an external review, while all the midterm notes did. Bond types could determine the compliance outcomes. Finally, we know that bond types reflect regulatory agencies' preferences. Enterprise bonds are regulated by the NDRC, and the NDRC's green bond guideline does not require an external review. In contrast, midterm notes are regulated by the NAFMII, and the NAFMII encourages green bond issuers to adopt an external review. The variation in compliance outcomes can be explained by regulatory agencies' preferences, which supports Hypothesis 1 stating that a regulatory agency that does not support global standards can lead to firms' low-level compliance with those standards. The case of Wuhan Metro can strengthen the causal inference from the regression analysis in Chapter 4.

The Effect of Western Linkage

Jiangsu Financial Leasing was established in 2014. It came from Jiangsu Province Leasing, which was one of the earliest leading companies in China. Jiangsu Financial Leasing became the first listed leasing company in 2018. Until 2019, the largest shareholder of Jiangsu Financial Leasing was Jiangsu Communications, which is a state-owned enterprise and accounts for 21.43% of the total shares. The second large shareholder is the Bank of Nanjing, which is not a state-owned bank and control 21.09%. In general, among the shareholders who control over 5% of shares, state-owned enterprises control 39.04% and other organizations control 32.9% (Table 5.2).

Table 5. 2 Major shareholders of Jiangsu Financial Leasing

Shareholder Name	Shareholding Proportion	Ownership
Jiangsu Communications	21.43%	State-owned
Bank of Nanjing	21.09%	Non-state-owned
Jiangsu Yangtze Bridge	9.78%	State-owned
Jiangsu Guangjing Xicheng Expressway	7.83%	State-owned
International Finance Corporation (IFC)	6.70%	Other
BNP Paribas Leasing Solutions	5.11%	Foreign

Source: Author's compilation, from Jiangsu Financial Leasing (2019)

The revenue of Jiangsu Financial Leasing comes from the interest and handling fee of its leasing. The main businesses of Jiangsu Financial Leasing are in the medical industry, public utilities, education, and renewable energy. Particularly, the medical industry accounted for 37.89% of its revenue in 2017, and public utilities accounted for 35.81 % (Jiangsu Financial Leasing, 2019). Jiangsu Financial strategically collaborates with BNP Paribas Leasing Solutions using its global brand to expand markets. However, Jiangsu Financial Leasing's net cash flow has become negative since 2016, and its total

debt is increasing (Jiangsu Financial Leasing, 2019). Before issuing the green bond, Jiangsu Financial Leasing had issued five financial bonds between 2014 and 2018 (Jiangsu Financial Leasing, 2019).

In 2019, Jiangsu Financial Leasing issued its first green financial bond, and the underwriters were Huatai Securities, Bank of China, and Industrial Bank. The green bond was certified by China Chengxin Credit Management (CCX), and it was the first domestic green bond that received the CBS certification. According to the CBS, the green bond's use of proceeds belongs to the solar project under the category of energy (CBI, 2019). The green bond will finance nine projects in Jiangsu province, Chongqing city, Guangdong province, and Shandong province, and the proceeds will be used for photovoltaic panels and the construction of solar farms (CBI, 2019; Jiangsu Financial Leasing, 2019).

Jiangsu Financial Leasing's compliance with the CBS mainly results from its Western linkages. The board of Jiangsu Financial Leasing has 11 members, and two members are nominated by BNP Paribas Leasing Solutions and the IFC respectively (Jiangsu Financial Leasing, 2019). According to documents and my interviews, Jiangsu Financial Leasing decided to adopt the CBS certification mainly due to the IFC's request (CBI, 2019).[57] Jiangsu Financial Leasing did not have the knowledge to issue green bonds until the CCX provided a series of training activities. Jiangsu Financial Leasing did not plan to have the CBS certification at the beginning. Because of the request from the IFC, Jiangsu Financial Leasing started to consider adopting the CBS

[57] Interview with expert at CCXI Credit Rating Co. Ltd., Beijing, 08/9/2019; Interview with expert at CBI, Beijing, 08/08/2019.

certification and realized that the certification could benefit its reputation. In sum, the Western stakeholders' direct pressure was the causal mechanism between Western linkages and Jiangsu Financial Leasing's high-level compliance with the CBS.

Beyond the case of Jiangsu Financial Leasing, the IFC continues to play a critical role in promoting the CBI certification among domestic green bond issuers in China. China Maanshan Rural Commercial Bank is another recent example. Maanshan Rural Commercial Bank signed an agreement with the IFC in 2017 to channel more investments into climate-smart projects (Meng et al., 2020). With the assistance of the IFC, Maanshan Rural Commercial Bank has adopted the global standard, EDGE, for its green buildings (Financial Times, 2021). In 2020, Maanshan Rural Commercial Bank became the first bank to issue a domestic CBI-certified green bond in China.

Moderating Effect

The BAIC Motor Corporation was established in 2010 and was listed on the Hong Kong Stock Exchange (HKEX) in 2014. In 2017, most shareholders of BAIC Motor were state-owned enterprises (Table 5.3). The largest shareholder is Beijing Automotive Group (BAIC Group), which is the fifth-largest automotive groups in China and ranked 160th among Fortune Global 500 for 2016 (BAIC, 2017). However, BAIC Motor has one crucial foreign shareholder, Daimler AG, which controls 10.08% of total shares (BAIC, 2017). Through this relationship, BAIC could learn about production, management, sale, and service from Daimler AG. The profit of BAIC Motor mainly comes from its subsidiary company, Beijing Benz Automotive (BBAC), which of the Daimler AG accounts for 38.665% of total shares in 2016 (BAIC, 2017).

Yet other own brands of BAIC Motor, such as Saab and Weiwang, continually suffer from deficits. In 2017, BAIC Group and Daimler reached an agreement to deepen their cooperation by increasing their investment in Battery Electric Vehicles (BEVs) and battery localization at BBAC (BAIC, 2017).

Table 5. 3 Major shareholders of BAIC Motor

Shareholder Name	Shareholding Proportion	Ownership
Beijing Automotive Group	44.98%	State-owned
Shougang	13.54%	State-owned
Daimler AG	10.08%	Foreign
Benyuan Jinghong Equity Investment Fund	4.50%	State-owned
Beijing State-Owned Capital Operation and Management Center	3.61%	State-owned
Beijing Energy Holding	3.44%	State-owned

Source: Author's compilation, from BAIC (2017)

The revenue of BAIC Motor mainly comes from automobiles, which accounted for 97.27% of total revenue in 2016 (BAIC, 2017). Since 2012, BAIC Motor has started to promote electric vehicles, and the sale of electric vehicles has grown from 5,462 in 2014 to 104,520 in 2017, accounting for around 20% of the national market share (BAIC, 2017). BAIC Motor maintained positive net cash flow between 2014 and 2016 (BAIC, 2017). However, its free cash flow to the firm (FCFF) was negative between 2014 and 2015 but then became positive in 2016 (Xie, 2018). BAIC Motor's current ratio between 2014 and 2017 was less than 1, which was also lower than the average in the sector (Xie, 2018). BAIC Motor might have difficulty repaying its short-term debt and needed to rely on new long-term loans to repay old short-term debts. BAIC Motor's debt is growing faster than its asset, and its debt-to-asset ratio rose from 61.8% in 2014 to 65.64% in 2016, which is higher than the average (58.61%) in the sector (Xie, 2018).

Before issuing the green bonds, BAIC Motor had already issued 11 bonds between 2010 and 2015, including corporate bonds, midterm notes, private placement notes, and super short-term commercial paper. The total scale was 12.1 billion RMB.

In 2016, BAIC Motor issued its first green bond, which was also the first green enterprise bond in China (Table 5.4). The total scale of the green bond was 2.5 billion RMB: 60% of the proceeds (1.5 billion RMB) will fund the development of energy-efficient cars and electric vehicles, and 40% of the proceeds (1 billion RMB) will be used as working capital. The lead underwriters are the Haitong Securities and the Industrial and Commercial Bank of China.

BAIC Motor submitted its application to issue the green bond to the NDRC in March 2016. The green bond was reviewed by the Department of Industry, the Department of Climate Change, and the Department of Resource Conservation and Environmental Protection in the NDRC. To demonstrate its support for the first enterprise bond, the NDRC approved BAIC Motor's green bond within ten days (China Economic Herald, 2016). In 2017, BAIC Motor issued a green bond again. Compared to other types of bonds, the two green bonds BAIC Motor issued have several advantages, such as a relatively lower coupon rate, a longer maturity, and a larger scale.

Table 5. 4 Green bonds issued by BAIC Motor, 2016-2017

ID	Year	Coupon rate	Type	Verification	CBI
1680208.IB	2016	3.45	Enterprise bond	No	Yes
1780128.IB	2017	4.72	Enterprise bond	No	Yes

Source: Author's compilation, from BAIC (2016, 2017)

Although the major regulatory agency, the NDRC, does not encourage green bond issuers to adopt external review, BAIC Motor still has a medium level of compliance with the CBS. Both of BAIC Motor's green bonds did not have external review. However, since the two green bonds are related to electric vehicles, they still met the CBI's definition of green bond. In other words, the effect of the regulatory agency's preference still exists but becomes weaker.

In this case, BAIC Motor's Western linkages played an important role in weakening the effect of NDRC's preference. BAIC Motor has many Western linkages. First, the board of BAIC Motor has 15 members, and 3 are foreigners. Many of the 15 members have connections with Daimler AG: some still have positions in Daimler AG; others had working experience in Daimler AG (BAIC, 2017). Moreover, BAIC Motor received ISO14001 in 2010, one of the earliest among Chinese automobile manufacturers (BAIC, 2017). Some evidence suggests that reputational concern could be the mechanism of Western linkages. For instance, BAIC Motor has published CSR/ESG reports in English annually (BAIC, 2021), and the content suggests the company cares about its global reputation. BAIC Motor might seek to build its reputation among Western stakeholders, so it does not choose low-level compliance. However, since BAIC Motor still cares about the NDRC's preference, it did not choose high-level compliance either.

Conclusion

This chapter provides evidence for the assumptions of hypotheses of this dissertation. To strengthen causal inference and identify causal mechanisms, this chapter focuses on three cases of Chinese green bond issuers. The case of Wuhan Metro confirms the effect of regulatory agencies' preferences on firms' compliance with the CBS. The case of Jiangsu Financial Leasing shows that the pressure from Western stakeholders could be the causal mechanism between Western linkages and firms' high-level compliance. The case of BAIC Motor suggests that the medium-level compliance might result from high Western linkages that undermine the effectiveness of the NDRC's preference.

Chapter 6: Extension

Introduction

After the analysis in the preceding chapters, this chapter attempts to extend the framework of this study to other emerging countries and issue areas. The framework of this research argues that the variation in firms' compliance with global private standards is determined by domestic regulatory agencies' preferences and firms' ties. Based on the logic of a most different system design, this chapter will select a different country and issue area for comparison. If the main hypotheses still hold in a different system, it suggests the scope of the framework can be generalized. This chapter does not intend to test all the hypotheses but mainly focuses on the effects of regulatory agencies' preference and Western linkage on firms' compliance outcomes.

This chapter is divided into two parts. The first half of this chapter will test the effect of Western linkages and regulations on firms' compliance with global standards of green bond in a different emerging market. The purpose of this analysis is to check whether the model of this project can be applied to an emerging market which is different from China. India is selected for the following reasons. First, India's green bond market and regulations are different from China. Although India also has an emerging market of green bonds, its development of green finance is slower than China. In addition, different from China, the regulations on green bonds are not that fragmented. Second, India and China have very different political and cultural structures. Most notably, India is viewed as a democratic regime and a caste system,

while China is not. If these structural differences do not change the outcomes from the model, it will indicate that these structural differences are not part of the scope conditions of the model, enhancing the external validity of the framework. The result of this section suggests that Indian firms with more Western linkages were more likely to adopt a higher level of compliance with the CBS. Furthermore, after the Indian regulatory agency clearly demonstrated its support for the global standards, more green bond issuers adopted a higher level of compliance with the CBS. These findings are consistent with the outcomes of the model.

The second part of this chapter goes beyond the issue area of green bonds to examine whether the effect of Western linkages and regulations can hold for the issue area of organic food. To control other confounding factors and make the case comparable to previous analysis on China, this chapter will focus on the case of organic food in China. In other words, this section is a comparison between two issue area within China. The case of organic food has some features different from the case of green bond in China. First, the regulatory structure of organic food is not similar to the regulatory structure of bonds. The major regulatory agencies created several certification systems for sustainability agriculture, and the regulatory agencies put different weights on these certification systems. Second, different from green bonds, the third-party certifications of organic food in China are mandatory rather than voluntary. Third, unlike the financial sector, the agricultural sector is not strongly controlled by the party-state. With these differences, the case of organic food provides an opportunity to examine whether the framework can be extended to an issue area with different features. The finding of this section indicates that Chinese firms with Western

linkages are more likely to choose organic certification, which is aligned with the hypothesis on Western linkages.

In brief, the two cases extend the scope of this research to a different county and a different issue area (Table 6.1). For both cases, I first trace the development of market and regulations to provide background for the analysis. Then, I focus on some crucial cases to test the hypotheses from the model.

Table 6. 1 Scope Extension

	China	Other emerging economies
Global standards of Green Bond	Ch 3- Ch 4 ⇩	⇨ Green bond in India
Other global standards	Organic food in China	

Extension to Other Emerging Economies: The Case of India

Background

Similar to China, India has encountered a serious environmental crisis. According to the Global Climate Risk Index, India is ranked as the fifth most climate vulnerable country in the world (Eckstein et al., 2019). India's Intended Nationally Determined Contribution (INDC) has pledged to reduce the carbon intensity of its GDP

by 33-35% by 2030 from its 2005 levels, and a preliminary estimate suggests that at least USD 2.5 trillion will be required from 2015 to 2030 to meet India's INDC goal (Ministry Of Environment, 2015). Nevertheless, the newest CPI study suggests that India still requires a nine-fold increase in annual investments from 2018 to meet the target (CPI, 2020). As a result, green bonds have become one of the new channels for requisite financing.

In February 2015, a private bank, Yes Bank, issued the first green bond in India. Since then, India's green bond market has grown, and India became the 7th largest green bond market globally in 2016 (CBI, 2017). Although India's ranking fell to the 8th position in 2017 and the 12th in 2018, the total domestic issuances of green bonds continue to increase. Private issuers led the market growth in the initial stages of this market (2015–2016), whereas public issuers took the leading role starting in 2017 (Saravade & Weber, 2020). Similar to the trend in China, 83.8% of proceeds of green bonds were used to finance renewable energy in 2017, followed by financing of low carbon transport and green buildings (CBI, 2018).

The primary regulatory agencies overseeing green bonds in India are the Securities and Exchange Board of India (SEBI) and the Reserve Bank of India (RBI), India's central bank. The SEBI regulates listed companies in the stock exchange through the "Issue and Listing of Debt Securities Regulations" (2008), while the RBI is responsible for managing interest rates and the banking sector. The two regulatory agencies have launched serval measures to promote sustainable finance in India. For instance, the RBI issued its first circular on banking and sustainable development in 2007, and it included renewable energy within the Priority Sector Lending (PSL)

targets, which requires banks to allocate 40% of loans to PSL targets. In addition, since March 2012, the SEBI has required 100 listed companies to disclose business responsibility reports as part of their annual reports. Since 2015, a 'comply or explain' reporting system for corporate governance was established by the SEBI, and the top 500 companies are required to report their Environmental and Social Governance (ESG).

In contrast to the proactive regulations for green bond in China, the regulatory agencies in India did not set up regulations for green bond "until the market calls for it"(Saravade, 2018). After a domestic green bond market emerged, the Securities and Exchange Board of India (SEBI) released "Concept paper for issuance of Green Bonds" (hereinafter referred to as "Concept Paper") on December 3th, 2015. The Concept Paper was open for public comments before December 18th, 2015, and then the final memorandum was approved by SEBI in January 2016. The "Concept Paper" proposed a framework which is largely based on the four components of the Green Bond Principles, including use of proceeds, project evaluation and selection, management of proceeds, and reporting.

After a process of public consultation, the SEBI formalized "Concept Paper" and released the guideline "Disclosure Requirements for Issuance and Listing of Green Debt Securities" in May 2017, which is India's first and only formal regulation on the green bond market. The guideline provided a list of 8 broad categories for green bond, and it retained the discretion to specify further categories. In addition, the guideline treated external review of pre-issuance as optional and not mandatory, but it required that the utilization of the proceeds shall be verified by an external auditor and provided

along with the half-yearly and annual financial results, raising extra costs for Indian issuers to label a bond as a green bond (Saravade & Weber, 2020).

Case Study

Different from the case of China, the regulatory structure is not fragmented; thus, we are unable to examine the effect of the regulatory agencies' preferences. Nevertheless, the case of India still provides a chance to conduct with-in case comparison. Since the SEBI, the major regulatory agency, announced the major policy document in December 2015, the SEBI's preference on compliance with global green bond standards was relatively unclear before December 2015. By comparing the period before December 2015 and the period after the timing, we could observe the potential impacts of SEBI's policy signal.

As seen on Table 6.2, before the announcement of "Concept Paper" in December 2015, two of four (50%) green bonds did not have an external review. After the announcement, only 2 of 17 (12%) green bonds did not have an external review. Moreover, after December 2015, many Indian green bonds adopt certification under the Climate Bonds Standard, which is the emerging market with the highest number of CBS certified green bonds (CBI, 2018). This pattern provides preliminary evidence for the effect of SEBI's policy signal. It suggests that when the major regulatory agency encouraged firms to comply with global green bond standards, green bond issuers were more likely to choose a higher-level compliance.

Table 6. 2 Indian Green Bond 2015-2018

Date	Issuer	Amount	External reviewed	Use of proceeds
Feb 2015	YES BANK	INR10bn	Assurance by KPMG	Renewable energy
Apr 2015	Export-Import Bank of India	USD 500m	n/a	Energy efficiency
Sep 2015	CLP Wind Farms India	INR 6bn	n/a	Low carbon transport
Nov 2015	IDBI	USD 350m	Assurance by KPMG	Renewable energy
Feb 2016	Hero Future Energies	INR 3bn	CBS certification	Renewable energy, low carbon
April 2016	PNB Housing Finance	INR 5bn	n/a	transport and water management
June 2016	Axis Bank	USD 500m	CBS certification	Renewable energy
Aug 2016	ReNew Power	INR 5bn	CBS certification	Low carbon buildings
Aug 2016	NTPC	INR 20bn	CBS certification	Renewable energy, low carbon
Aug 2016	Greenko	USD 500m	SPO by Sustainalytics	buildings and transport
Dec 2016	YES BANK	INR 3.3bn	Assurance by KPMG	Renewable energy
Jan 2017	Jain International Trading	USD 200m	SPO by Sustainalytics	Energy, Water, Adaptation
Feb 2017	ReNew Power	USD 475m	CBS certification	Renewable energy
Mar 2017	IREDA (x2)	INR 7bn	CBS certification	Renewable energy
Jul 2017	Rural Electrification Corp	USD 450m	CBS certification	Renewable energy
Jul 2017	L&T Infrastructure Finance Company Ltd	USD 103m	n/a	Renewable energy
Aug 2017	Azure Power Energy Ltd	USD 500m	CBS certification	Renewable energy
Dec 2017	Indian Railway Finance Corp	USD 500m	CBS certification	Low Carbon Transport
Dec 2017	Power Finance Corporation	USD 400m	CBS certification	Renewable energy
Jul 2018	State Bank of India	USD 50m	CBS certification	Renewable energy; Low Carbon Transport
Sep 2018	State Bank of India	USD 650m	CBS certification	Renewable energy; Low Carbon Transport

Source: CBI（2018）

The cases of Yes Bank and CLP Wind Farm can further provide preliminary evidence for the moderating effect of Western linkages. Both companies issued green

bonds before the “Concept Paper” issued by the SEBI in December 2015, while they have different choices on the external review of green bond issuance: Yes Bank had chosen assurance by KPMG but CLP Wind Farm did not have an external review.

Yes Bank is India’s fifth largest private sector bank, and it was the first bank in India that has made a commitment of funding 5 GW of Renewable Energy projects. In February 2015, Yes Bank issued India’s first green bond with the size of INR 1000 crores (USD 160 million), a coupon of 8.85%, and a maturity of 10 years. The issuance was successfully received an oversubscription, expanding the size from originally USD 80 million to USD 160 million. The proceeds of the green bond would finance Green Infrastructure Projects in Renewable Energy and Energy Efficiency Projects including solar power, wind power, biomass, and small hydel projects. Yes Bank’s green bond received assurance from KPMG in India which is based on the Green bond principles. KPMG’s assurance report described that “nothing has come to our attention to suggest that the framework used for the issuance of two green bonds for INR 1,000 crores and INR 315 crores in February and August 2015 respectively, is not, in all material respects, conforming to the requirements of the s, 2015.”(KPMG, 2016)

Yes Bank has many Western linkages. The CEO, Rana Kapoor, obtained an MBA from Rutgers University. The Chairperson of the CSR Committee, Radha Singh, has a Master’s Degree in Public Policy & Administration, from Harvard University. The other independent directors in the CSR Committee, Diwan Arun Nanda and Ravish Chopra, have working experience in the HSBC Group. Furthermore, there are several western companies among the top ten shareholders, including Morgan Stanley Asia (Singapore) Pte., Franklin Templeton Investment Funds, Goldman Sachs (Singapore)

Pte., Swiss Finance Corporation (Mauritius) Limited, Credit Suisse (Singapore) Limited, and Citigroup Global Markets Mauritius Private Limited. In addition, Yes Bank is the first commercial bank from India to achieve the ISO 14001:2004 certification in 2013 and participate in UNEP Finance Initiative, the Principles for Responsible Banking (PRB), UN Global Compact, and Carbon Disclosure Project. Lastly, Yes Bank is the first Indian bank listed on all the three indices- Dow Jones Sustainability Index (DJSI), MSCI All Country World Index- ESG leaders and FTSE4Good Emerging Index.

In the year of 2015, CLP Wind Farms, one of the largest wind power developers in the Indian power sector, also issued green bonds with the size of INR 6 billion (US$90.3m), which included three equally sized tranches of INR 2bn with the tenor of 3, 4 and 5 years. The bonds received an AA rating by India Ratings and Research Private Limited, and the underwriters of these green bonds are Standard Chartered Bank, IDFC Limited, and the Hong Kong and Shanghai Banking Corporation Limited. These green bonds are the first corporate (non-bank) green bond issuance in India and all of South Asia. The proceeds from the green bonds would be used for renewable energy space. However, CLP Wind Farms' green bond did not include any external review.

The CLP Wind Farms itself does not contain strong Western linkages. Most main managers of the CLP Wind Farms graduated from Indian universities. CLP Wind Farms is the wholly-owned subsidiary of CLP Holdings Ltd, which is an investor and operator in the energy sector of the Asia-Pacific region. The core operation of CLP Holdings Ltd is in Hong Kong, and it lists on the Hong Stock Exchange. To be sure,

CLP Holdings Ltd has some strong Western linkages. The largest shareholder of CLP Holdings Ltd in 2015 is the Kadoorie Family who has a combined shareholding of 35.01%. Institutional investors from North America, Europe, and Asia control 34.07% of shares, and retail investors control 30.92%. Moreover, 50% of the board in 2015 comes from the UK, 21% from Australia, 21% from China, and 8% from India. However, CLP Holdings Ltd also has several investments in coal and gas in China, Hong Kong, India, and Taiwan. As a result, the effect of western linkages of CLP Holdings Ltd did not immediately lead to a better environmental performance at the time of the green bond issuance in 2015. The score of CLP Holdings Ltd in DJSI decreased from 63 in 2014 to 57 in 2015, and the score of CLP Holdings in the Carbon Disclosure Project was downgraded from "B" in 2014 to "C" in 2015.

In sum, the case of green bond in India confirms some of the findings from the China case. First, the regulatory agency's preference did affect firms' compliance with global green bond standards. The India case shows that when the SEBI started to encourage firms' compliance with global green bond standard, firms' level of compliance became higher. Furthermore, the case of India also shows that before the SEBI publicly released its preference, firms with more Western linkages were more likely to choose a medium-level compliance, which indicates that Western linkages might have a moderating effect on regulatory agency's preference.

Extension to Other Issue Areas in China: The Case of Organic Food

Background

There are several global standards of organic food. In 1980, the International Federation of Organic Agriculture Movements (IFOAM) created the first global standard of organic food, which codified four principles (health, ecology, fairness, and care) of organic production. Later, the EU established its organic regulation in 1991, Canada (COS) in 1998, Japan (JAS) in 1999, and the US (NOP) in 2000. Following these northern countries, there are hundreds of organic standards and regulations issued by state and non-state actors since the 2000s (Fouilleux & Loconto, 2017). To overcome barriers to trade caused by too many standards of organic food, harmonization of standards is promoted through bilateral agreements between countries, regional standards, and collaboration among international organizations at the trans-national level (Fouilleux & Loconto, 2017). Moreover, the third-party certification has become the dominant form of certification in the organic field, and the International Organic Accreditation Service (IOAS) becomes a transnational private authority for accreditation.

The development of organic agriculture in China was closely related to export at the beginning. The first certified organic food product in China is organic tea which adopted SKAL certification and was exported to the Netherlands in 1990 (Paull, 2008). Nowadays, the top three countries for China's organic products export are Japan, United States, and the Netherlands. However, China's domestic market of organic food also proliferates. In 2006, the domestic sale value of organic food exceeded the export

value for the first time (Chen et al., 2018). The market size of organic products in China reached USD 3.3 bn in 2019 with a growth rate of 9.8%, higher than that of Asia Pacific (8.0%). The main driving force of domestic demand is the middle class with growing awareness of food safety and quality (Veeck et al., 2010).

The Chinese government has played a strong role in the development of organic food in China. The local governments have provided various financial support and economic incentives, such as subsidies, preferential loans, and tax exemptions, for organic production, and the central government actively promotes the standards and certification systems for organic food (Chen et al., 2018). Currently, China has three separate certification schemes: Green food, organic food, and Hazard-Free food. Compared with the standard of organic food, the standards of green food and hazard-free food are less stringent.

The co-existence of various certification schemes indicates that the Chinese government has a complicate preference toward organic food. On the one hand, it supports the development of China's certification of organic food. On the other hand, it worries that the standard of organic food is not adoptable in many places with the serious environmental situations, and the expansion of organic food might not produce sufficient food for the population in China (Chen et al., 2018). In practice, studies suggest that organic agriculture has received relatively less support from the government compared to green and hazard-free food (Chen et al., 2018; Zhang et al., 2013).

Table 6. 3 Comparison of Organic, Green, and Hazard-free Food in China

	Organic agriculture	Green food	Hazard-free food
Year established	1994 (national standards passed in 2005)	1990	2001
Regulatory body	MoA, SEPA, and CNCA	MoA	MoA
Permits genetically modified organisms?	No	Yes	Yes
Permits synthetic fertilizer and pesticides?	No	Yes (only some kinds of chemical applications are permitted and amounts are regulated)	Yes (a wider range of agrochemicals are allowed than for green food)
Residue testing	Yes	Yes	Yes
Initial force	Government and large agribusinesses for exports	Government and market	Government-initiated
Certifier and costs	Third party certification; 20-40,000 CNY* (before new regulations in 2012)	Ministry of Agriculture's Green Food Development Centre; 10,000 CNY**	Ministry of Agriculture's Center for Agri-Food Quality and Safety; no fee
Traceability	Yes	No	No
Period of validity	One year	Three years	Three years

Source: Chen et al.(2018) and Scott et al.(2014)

To address the severe environmental degradation that resulted from several decades of the ever-increasing use of chemical fertilizers and pesticides for agricultural production, the early effort of the Chinese government can be traced back to the "Chinese Ecological Agriculture" (CEA) in the 1980s. Although the CEA sought to develop sound ecological principles for agriculture, it only had limited success and still allowed restricted use of chemical fertilizers and pesticides (Chen et al., 2018).

In the 1990s, the Ministry of Agriculture (MoA) attempted to remedy the problems of CEA by creating the Green Food program to promote a certification system

of agricultural products which is suitable for Chinese conditions. Different from CEA, the Green Food program focused on the product and the outcome rather than on the process (Paull, 2008). In November 1992, the China Green Food Developmental Center (CGFDC 中国绿色食品发展中心) was established, as an agent of the MoA. In 1995, the CGFDC created the standards and certification of green food. Green food has been classified into Grade A and Grade AA, and the Grade AA needs to be certified by special agencies to use the logo of Grade AA green food. Grade A green food is the most common reference to green food, and Grade AA green food would be phased out in favor of organic certification (Chen et al., 2018; Paull, 2008). Some sources suggest that the Grade AA green food standard is no longer used in green food certification (Scott et al., 2014).

Alongside the development of green food, the former Chinese State Environmental Protection Agency (SEPA) became a leading role in the development of organic food in China. The motivations of SEPA are to produce "high potential for high-quality exports", and "to encourage innovative farming practices that allowed for a more environmentally sustainable agriculture"(Paull, 2008). In 1994, the Organic Food Development and Certification Center of China (OFDC, 南京国环有机产品认证中心有限公司) was established in Nanjing by SEPA, and it was the first specialized certification agency for organic food in China. The OFDC is actively involved in creating the organic standards in China, and it collaborates closely with international organizations such as FIBL, Soil Association, United Nations Environment Programme, and the World Bank. The certification operation of the OFDC was accredited by the International Organic Accreditation Service under the IFOAM accreditation

programme in 2002, making OFDC-certified organic products were recognized by international markets. Overall, SEPA's organic food program and MOA's green food program are based on different philosophies: the former seeks to comply with global organic standards, while the latter adjusts to local conditions (Paull, 2008).

The SEPA was the initial regulatory agency of organic food, which issued "Organic Food Certification and Management Measures" in 2001. Since implement of "Regulations of the People's Republic of China on Certification and Accreditation" in 2002, Certification and Accreditation Administration of China (CNCA, 国家认证认可监督管理委员会) under the State Administration for Quality Supervision and Inspection, Quarantine (AQSIQ, 国家质量监督检验检疫总局)[58] becomes the main authority for unified management, supervision, and coordination of national certification and accreditation work. Between 2014 and 2015, CNCA has issued several measures, such as "Administrative Measures on Organic Product Certification" in 2004, and "Organic Products" and "Implementation Rules for Organic Product Certification" in 2005. In 2005, the AQSIQ and the Standardization Administration of the People's Republic of China (SAC, 中国国家标准化管理委员会) jointly introduced China's national organic standards, National Standard for Organic Products, the People's Republic of China (GB/T 19630-2005), which refers to several global standards, including the IFOAM Basic Standard, Codex Alimentarius, EU regulation, NOP, JAS, and ISO 9001-2000 Quality Management System. The GB/T 19630-2005 were updated

[58] After 2018, the AQSIQ and SAC are integrated into the State Administration for Market Regulation (SAMR, 国家市场监督管理总局).

in 2011 and 2019 to National Standards for Organic Products, GB/T19630-2019, and the new standard becomes more stringent.

Under the current Chinese regulations of organic food, any organic products marketed in China are required to be certified by certification bodies and bear the labels "ORGANIC" or "CONVERSION TO ORGANIC"; it is illegal if the organic products are not certified (Xie et al., 2011). Certification bodies need to be approved by CNCA and accredited by China National Accreditation Service for Conformity Assessment (CNAS, 中国合格评定国家认可委员会). During 1994-2002, there were only two certification agencies in China – the OFDC and China Organic Tea Research and Development Centre (OTRDC). The number of certification agencies approved by CNAS increased to more than 30 in 2008 (Xie et al., 2011) and to 85 in 2019.

Since the green food standards and organic food standards are stringent, the Chinese government seeks to create a basic minimum requirement for agro-food production (Chen et al., 2018). In 2001, the MoA announced the Hazard-free Food Action Plan to tackle the food safety crisis and agro-chemical contamination. Compared to green food standards, hazard-free standards permit a wider range of agro-chemicals.

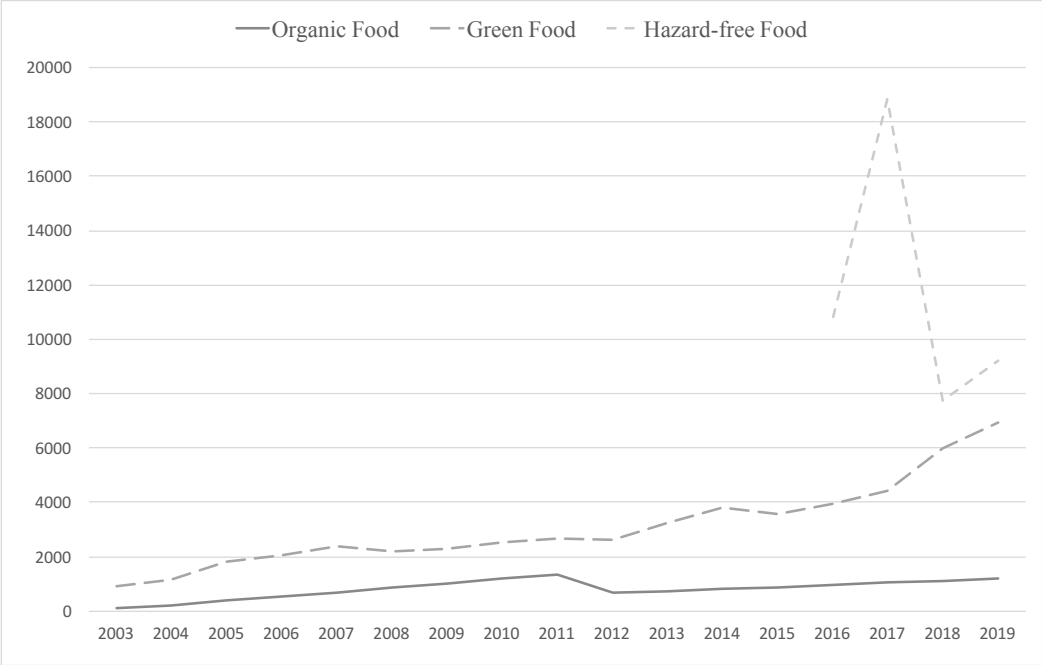
Case Study

The standards of green food and hazard-free food are less strict than the standard of organic food. In addition, the cost of certification for green food and hazard-free food is much cheaper than the cost of certification for organic food. The cost of

organic food certification can be up to RMB 18,000 annually (Yasuda, 2017). Also, the high start-up costs and the use of techniques, such as organic fertilizer and seed, for the official organic food certification is not affordable by most farmers, so certain farmers chose not to participate in the state-sponsored organic certification program (Yasuda, 2017). Moreover, although the government officially supports the development of organic, green, and hazard-free food, the government provides more resources for green and hazard-free food in practice, which suggests that the government might treat green and hazard-free food as higher priority than organic food.

The aggregated trend of farmers' choice of certifications could partially reflect the effect of the regulator's preference. According to the statistics from the CGFDC (Figure 6.1), the total number of certifies units of organic food in 2016 is 951, while the total number of certifies bodies of green food in 2016 is 3949, and the number for hazard-free food is 10833. This pattern continues between 2016 and 2019. It is possible that the government's stronger support for green and hazard-free food attracts more farmers to adopt the certifications for green and hazard-free food. Moreover, the data indicates that the gap between certification of organic food and certification of green food increases since 2011, which is the year revised and more stringent National Standards for Organic Product issued.

Figure 6. 1 Number of Certified Units in China



Source: China Green Food Developmental Center

Among the three certification systems in China, the organic food is the certification closer to global standards. Thus, we can treat the Chinese firms who chose organic food certification adopt a higher level of compliance with global standards, while choosing the green food or hazard-free food certification represents a lower level of compliance.

To further investigate the effect of Western linkages on firms' compliance outcomes, this chapter focuses on listed firms that have adopted organic food, green food, or hazard-free food certifications. Information on listed firms' board members, shareholders, and financial performance comes from SINA Finance. The data of firms' certification status comes from the National certification and accreditation information

public service platform, which is managed by the State Administration for Market Regulation.

Among the listed companies on the Shanghai Stock Exchange and Shenzhen Stock Exchange, there are 27 listed firms in agriculture, forestry, animal husbandry, and fishery industries. Among the 27 listed firms, 6 firms had organic certifications, 3 firms had green food certifications, and 8 firms had hazard-free food certification. 4 of the 6 firms with organic certifications have some Western linkages (Table 6.4). In comparison, only 2 of 11 firms with green food certifications or hazard-free food certification have Western linkages. This pattern provides preliminary evidence for the hypothesis on Western linkages.

Table 6. 4 Listed Firms in China with Organic Food Certification

Company	Certification	Western linkage
Dahu Aquaculture Co.,Ltd.	Organic food	Board member with education or working background
Gansu Yasheng Industrial(Group) Co.,Ltd.	Organic food	NA
Heilongjiang Agriculture Company Limited	Organic food	Shareholders
Shandong Homey Aquatic Development Co.,Ltd.	Organic food & hazard-free food	Export; compliance with other global standards
Zoneco Group Co.,Ltd.	Organic food	Board member with education or working background; strategic partners; compliance with other global standards
Muyuan Foods Co.,Ltd.	Organic food & hazard-free food	NA

Source: Author's compilation, from firms' annual reports

Take the cases of Shandong Homey Aquatic Development Co., Ltd. and Muyuan Foods Co., Ltd. as examples. The Muyuan Foods Co., Ltd does not have obvious Western linkages, and it changed the certification from organic food to hazard-

free food since 2016. This indicates that the certification of hazard-free food could be more attractive for companies without Western linkages. In contrast, the Shandong Homey Aquatic Development Co., Ltd has some Western linkages. Its revenue from overseas market accounts for 35% of total revenue in 2019. The company passed FDA authentication of USA and obtained the certificate of HACCP, exporting its organic products to Europe and North America. The Homey Group also has a branch, Homey Group International Inc., in Canada. As a result, the Shandong Homey Aquatic Development Co., Ltd has chosen the organic food certification.

Conclusion

The purpose of this chapter is to examine the external validity of the framework proposed by this dissertation. Based on the logic of most different design, this chapter chooses the cases of green bond in India and organic food in China. The main finding from the case studies shows that the main hypotheses from the model can be supported by preliminary evidence from the case of green bond in India and organic food in China.

The case of India shows that green bond issuers did not actively comply with the global standards of green bond before the SEPA signaled its preference. After the SEPA issued the policy document, which is basically aligned with the GBP, most green bond issuers adopted CBS certification or SPO. This suggests that the regulatory agency's policy signal might influence firms' compliance with the global green bond standards. Moreover, the case of Yes Bank and CLP Wind Farms demonstrates the moderating effects of Western linkage. Both firms issued green bonds before the SEPA

issued its regulation. CLP Wind Farms, as expected, did not adopt any external review, while Yes Bank, which has strong Western linkages, still adopts KPMG's assurance for its green bonds. In short, the case study of India shows that the regulatory agencies' preferences and Western linkages aspects of the model is generalizable to other emerging countries.

The case study of organic foods in China further indicates that the model could be applied to other issue areas. In the organic field, the government's policy did shape farmers' choice of certifications. Although the Chinese government encourages the organic certification system which is closer to global standards of organic food, it also creates green food and hazard-free food certification systems to meet local conditions. The aggregated data suggests that more farmers chose to comply with less strict local standards rather than the organic food standard. Through the analysis of listed companies in China, this chapter also found that the companies with Western linkages are more likely to choose organic food certification.

Admittedly, this chapter has limitations. First, due to data availability, this chapter does not examine all the hypotheses put forward in this thesis. This chapter mainly focuses on the effects of regulatory agencies' preferences and Western linkages. Second, this chapter can only provide preliminary analysis and evidence for the hypotheses. A more rigorous process of data collection and design of causal inference are still needed for future studies

Chapter 7: Conclusion

Introduction

This dissertation investigates the variation in Chinese firms' compliance with global green bond standards. China has recently become one of the largest green bond markets in the world; however, some Chinese green bonds also face accusations of "greenwashing," meaning the proceeds are not fully used for green projects. This research seeks to investigate the two faces of Chinese green bonds, which can elucidate the relationship between China and transnational climate governance. Specifically, this dissertation attempts to address two puzzles. First, why does China have such a rapid growth of green finance? Second, why do some Chinese green bond issuers comply with the international Climate Bond Standards, while others fail to do so? To answer the first question, this dissertation uses qualitative methods to trace the institutional development of green finance in China and examines the impacts of transnational climate governance and state capitalism. Regarding the second question, this research establishes a firm-level framework and resorts to mixed methods to study how regulatory agencies' preferences and properties of firms' ties affect firms' compliance with global green bond standards.

The remainder of the chapter covers five parts: Section 2 summarizes the main findings of this research; Section 3 reviews the theoretical and empirical contributions of this dissertation; Section 4 delineates broader implications that can be cumulated from this study; Section 5 discusses limitations of this dissertation and elaborates on directions for future research.

Summary of Findings

This dissertation first aims to understand why the development of green finance has recently increased very rapidly in China. By using process tracing, this research shows that both transnational climate governance and state capitalism have been politically necessary required conditions for the rapid proliferation of green finance in China (Chapter 2). Transnational climate governance generated crucial momentum for green finance by bringing in innovative and systematic policy ideas, supported further by the top leadership in China. State capitalism has played a crucial role in setting standards for the market and mobilizing the banking sector and state-owned enterprises to participate in the green bond market. However, this research also remarks on the limitations of China's state capitalism in promoting green finance. Constrained by the fragmented bureaucracy, China's state capitalism has failed to generate consistent domestic standards of green finance. Moreover, China's state capitalism itself becomes an obstacle to harmonization between domestic and global standards (Chapter 2 & Chapter 4). Finally, China's state capitalism cannot mobilize more market actors to participate in the market of green finance.

To avoid the issue of "greenwashing," several global private standards, including the GBP and CBS, have emerged in the global green bond market. Existing literature on private authority and transnational governance can enable us to understand how and why these global private standards have emerged; however, extant studies still cannot fully explain the variation in Chinese green bond issuers' compliance with global green bond standards. This dissertation tries to fill this analytical gap by

developing a theoretical framework, which emphasizes regulatory agencies' preferences, political connections, and Western linkages (Chapter 3).

The hypotheses on firms' compliance were first tested through quantitative analysis on Chinese green bonds between 2015 and 2018 (Chapter 4). The result from the ordered logistic regression indicated that when the main regulatory agency did not encourage compliance with the CBS, Chinese green bond issuers were more likely to choose low-level compliance with the CBS. The model also confirmed that political connections, central state-owned enterprises, and Western linkages were crucial and had positive impacts on Chinese green bond issuers' compliance with the CBS. Furthermore, the model showed that the interaction term between regulatory agencies' preferences and Western linkages were significant and had a positive effect on firms' compliance. In other words, when the major regulatory agency did not encourage compliance with the CBS, firms with more Western linkages were more likely to choose medium-level compliance with the CBS.

To examine the causal effect and causal mechanisms further, case studies on Chinese green bonds are presented in Chapter 5. Firstly, the process tracing of green bond issuance demonstrates that the market infrastructure, including the external review agencies of a green bond in China, is not as same as those in advanced economies, supporting the assumptions of the framework in this dissertation. Secondly, the with-in case comparison of Wuhan Metro's green bonds verifies that regulatory agencies' preference is the main factor affecting firms' compliance with the CBS. Thirdly, the case study of Jiangsu Financial Leasing designates that the pressure from Western stakeholders is one of the main causal mechanisms between Western linkages

and firms' high-level compliance. Finally, the case study of BAIC Motor provides preliminary evidence for the moderating effect of Western linkages. In short, Western linkages do matter.

To explore whether the theoretical framework is generalizable or not, this dissertation conducts case studies on green bonds in India and organic food in China (Chapter 6). The case of a green bond in India suggests that the major regulatory agency's preference could influence Indian green bond issuers' compliance outcomes. By investigating the effects of the announcement of the SEPA's green bond guideline, this study found that an increased number of green bond issuers adopted CBS certification or SPO after the SEPA stated its supports for global green bond standards. Furthermore, before the SEPA's signal, green bond issuers with more Western linkages still chose medium-level compliance, which preliminary evidence for the moderating effect of Western linkages. The case of organic food in China revealed that the government's preference could influence farmers' choice in certification systems. With the government's support, more farmers chose green food and hazard-free food certification than organic food certification. Through the analysis of listed companies in China, the case study also found that firms with Western links were more likely to adopt organic food certification, closer to global standards.

In summary, the findings of this study help expand scholarly understanding of the relationship among domestic regulations, firms' networks, and firms' compliance with global private standards. Specifically, this research demonstrated that the regulatory agency's preferences could influence firms' compliance with global environmental standards. It also remarked on the positive effect of political connections

and Western linkages on firms' compliance outcomes. Finally, this research found that Western linkages have a moderating effect on the influence of regulatory agencies' preferences.

Contributions

At the micro-level, this dissertation makes a theoretical contribution to the literature on transnational private governance (or transnational business governance) by developing a firm-level framework to analyze firms' compliance. Much of the literature on transnational private governance has devoted substantial attention to the emergence, designs, interactions, performance, and legitimation of transnational private governance. Recent studies have shifted the focus to the issue of implementation and compliance (Graz, 2021), and my research will advance this research agenda by studying compliance with global green bond standards.

However, existing theoretical endeavors still lacks adequate firm-level frameworks for explaining the variation in firms' compliance with transnational private governance. Although recent studies have started to address the impacts of domestic regulations and firms' global connections, few studies provide a theoretical framework to clarify how domestic and global factors determine firms' compliance outcomes together. This research aims to fill this gap by bringing in the literature on institutional theory (Delmas & Toffel, 2004; Marquis & Raynard, 2015), providing critical assumptions and analytic tools on firms' compliance with global environmental standards.

This dissertation will also make a theoretical contribution to the literature on institutional theory by uncovering how domestic regulations and firms' networks affect firms' compliance with global standards. In contrast to institutional theory, the framework of this dissertation elaborates on the domestic regulatory agencies' possibly divergent preferences rather than assuming that domestic regulatory agencies as unitary actor. Moreover, this research focuses more on the properties of firms' ties with stakeholders rather than the firm's characteristics. Specifically, the framework of this study discusses how political connections and Western linkages affect firms' compliance with global environmental standards.

In addition, this research extends the focus in the literature on institutional theory, based on the moderating effect of firm characteristics. This study further investigates how firms' ties interact with domestic regulations, and it explains how Western linkages could have a moderating effect on the impact of regulatory agencies' preferences. Compared to existing approaches, the empirical results suggest that this research's framework could better explain firms' compliance outcomes in emerging markets.

In a broader sense, the framework of this research will allow scholars to investigate the *politics* of transnational private governance. The framework assumes the compliance or implementation of global private standards involves contested political processes rather than a simple top-down/ bottom-up or inside-out/outside-in process. The authority of global private standards could be challenged by local actors, but the authority of domestic regulatory agencies could also be contested by the global actors. The outcomes of political processes might vary depending on the main actors'

preferences and interactions, formal and informal institutions, and local contexts. The framework demonstrates that the interactions between firms' main stakeholders with different preferences could produce a compromised outcome.

At the macro level, this research contributes to the literature on low-carbon transition in emerging economies by identifying the importance of transnational climate governance and state capitalism in the evolution of green finance in China. The case of China contributes to the theory-building efforts on the political construction of markets in three ways. First, the state in emerging economies can shape the market creation dynamics by setting standards and mobilize state-owned enterprises to serve as primary market participants. Specifically, Chinese regulatory agencies adopt this approach to create the initial green bond market directly, which differs from the market-nurturing process in India and Japan. By unpacking the features and sequence of China's market-building strategies on green finance, this study provokes the discussion on how governments form and shape markets in the scholarship on marketcraft (S. K. Vogel, 2018).

Second, this dissertation has suggested that the fragmented bureaucracy in China causes inconsistent and selective adoption of global standards in the arena of green finance. This finding reverberates the findings from studies on other issue areas in China (Chu, 2020; Križić, 2021). As the literature on the regulatory state of the South (Dubash & Morgan, 2013) has shown, bureaucratic practices and traditions are critical factors, determining the design and implementation of regulations in the South. This dissertation also provides an empirical nuance of bureaucratic practices in China by

demonstrating that bureaucrats themselves could have divergent preferences and practices, leading to regulatory inconsistency within the same issue area.

Third, this research points out that the existing domestic-centered framework, solely highlighting domestic factors, such as the state capacity and state-society relations, is not enough to explain the rapid market development of green finance in China. The China case suggests that the international factors, such as actors and ideas from transnational climate governance, need to be considered to generate a convincing explanation on the formation of markets for green finance. Concisely, the dissertation encourages the studies on the political construction of markets should examine the interplay of domestic and international factors, resonating with the similar points made by recent studies on the effects of interdependence and diffusion on low-carbon transitions (Meckling & Hughes, 2018; Li et al., 2020; Steffen et al., 2018). The political construction of local markets is embedded in broader networks of global actors.

Finally, this dissertation contributes to the burgeoning studies on green bonds and sustainability. Green bonds have been recognized as one of the most prominent innovative financial tools to mobilize capitals toward sustainability, and existing scholarship has started to understand drivers of the green bond market and the policy-making process of green bond policies (Banga, 2019; Deschryver & de Mariz, 2020; Faske, 2018; Maltais & Nykvist, 2020; Monk & Perkins, 2020; Tolliver et al., 2020; Tu et al., 2020). This dissertation contributes to this research agenda by providing an in-depth case study of China and a comparative analysis of India and Japan. Furthermore, this dissertation contributes to the studies of green bond certification

(Ehlers & Packer, 2017; Park, 2018b) and advances on past ones by identifying factors that promotes the credibility of green bonds.

Implications

Global Private Standards

The empirical findings of this dissertation could have a broader implication for the study of evolution of global private standards. Recent studies have centered on the issue of fragmentation among competing private sustainability standards (Fransen, 2011; Fransen & Conzelmann, 2015; Turcotte et al., 2014). However, green bond is the issue area which has not been fully probed by the extant studies. In fact, the case of green bonds indicates that the global standards could change from fragmentation to convergence (Turcotte et al., 2014). Several global green bond standards exist in this field, some of which are private standards, such as the GBP and CBS, and some are national and regional standards, such as EU sustainability taxonomy. Although the field of the green bond represents a fragmented regulatory structure, the current trend suggests that there are possibilities of convergence among these global green bond standards. For example, the CBS and EU sustainability taxonomy have many common elements, and they are influencing each other.

In particular, the case of China shows that the partial convergence among national and global standards is gradually happening. For instance, the newest version of "Green Bond Endorsed Project Catalogue" (2021 Edition) has removed the clean utilization of coal from the green bond catalog. Moreover, China is actively cooperating

with the EU to adopt a common taxonomy for green finance. However, this research suggests that adaptation to a full-fledged global standard might be an unlikely scenario for China in the near future. As to many Chinese experts, whom I interviewed, they were skeptical about the need for a totally common language of green finance, and they would rather use China's own standard in China's domestic market. This finding suggests that preference divergence is still a critical factor hindering the convergence of standards.

Green Bond and Sustainability

As green bonds have become a prevalent financial instrument for mobilizing resources for green projects, recent studies have started to explore whether the green labels and external reviews have real positive effects on green bonds' performance and sustainable development (Dorfleitner et al., 2021; Flammer, 2021; Russo et al., 2021). Although this dissertation does not provide a direct answer to this issue, the finding of this research suggests that the green bonds without external review did suffer from the problem of greenwashing. For instance, if the procced of green enterprise bonds in China were used in paying back old debts, it is hard to imagine this kind of activity can produce any additional environmental benefits.

Moreover, this dissertation suggests the impacts of green bonds could be moderated by domestic institutions, which echoes some recent studies (Anh Tu et al., 2020; Banga, 2019; MacAskill et al., 2021). Even though global standards of green bonds are diffusing, they are inevitably affected by domestic political and economic institutions in several ways. First, the domestic regulatory regime could affect the

quality of green labels and external reviews. This dissertation has pointed out that the fragmented regulatory regime can create more opportunities for greenwashing. Moreover, domestic regulations could determine the quality of firms' information disclosure. If regulatory agencies did not actively encourage issuers to release more environmental information, external reviewers would not have enough data to properly evaluate issuers' green projects. Second, domestic institutions could determine who participates in the green bond market. The findings of this study indicate that if the private sector did not actively participate in the green bond market, it is questionable that the resources mobilized by the state can meet the massive financial demand of sustainable development. In brief, to correctly assess the impacts of the green bonds, the effect of domestic institutions needs to be considered.

China's Influence

This research can also contribute to the current academic debates on the rise of China's influences. Current literature has extensively debated whether rising powers will challenge global governance or comply with its current frameworks (Foot & Walter, 2011; Gray & Murphy, 2013; Helleiner & Kirshner, 2014; Kahler, 2013; Kastner et al., 2016). Specifically, scholars are debating whether and how China contests the liberal financial order (McNally, 2020; Petry, 2020b); to what extent China's growing economic clout translates into influence in transforming the public and elite opinion, global standards, or global supply chain (Kastner & Pearson, 2021; Rühlig, 2021; Solingen, 2021). Some even worry about China's market power's might

generate ‘‘Shanghai effect,’’ which could lead to a race to the bottom of the global standards (Adolph et al., 2017; Kaplinsky et al., 2011; Schleifer, 2016, 2017).

Based on the findings, this research suggests, at least for the issue of green finance, China is not the game-changer of existing transnational climate governance yet, which is in line with the findings of many studies (Hale & Roger, 2017; Huang & Yue, 2020). Although China might intend to affect the global standards of green finance and the development of the green finance in other countries, it does not have the abilities to reach these goals yet. One obvious barrier is that China is unable to construct consistent domestic standards of green finance among fragmented bureaucracies, hurting China’s credibility on proposing a common global standard of green finance.

Policy Implications

The findings of this research can provide important practical policy implications on how to enhance firms’ compliance with global environmental standards. First, the findings indicate that domestic regulatory agencies’ preferences are crucial for firms’ compliance outcomes. Chapter 4 shows that when regulatory agencies urge green bond issuers to comply with the global green bond standards, it is more likely that firms will choose a higher level of compliance. Thus, the advocates of global standards should try to advance the convergence between domestic regulatory agencies’ preferences and transnational private governance. For instance, the establishment of a coalition between domestic officials and global policy entrepreneurs, such as the Green Finance Task Force (GFTF), could promote the convergence. Admittedly, the fragmented bureaucracy presents an obstacle. Yet, the case of China suggests that the

fragmentation of regulations can gradually be overcome when the top leadership has a clear policy choice. The advocates of global standards ought to try to establish a credible private authority and influence the top leaders in emerging markets through formal and informal networks.

Second, if influencing domestic regulatory agencies and top leaders is not feasible, advocates of global private standards should create the conditions, enhancing firms' Western linkages. The findings of this research suggest that increasing firms' Western linkages could make firms more likely to choose a higher level of compliance with global green bond standards, even when regulatory agencies do not urge compliance. Specifically, advocates of global standards could promote financial liberalization in emerging economies, allowing Western stakeholders to have greater access to the domestic market. Advocates could also encourage firms to recruit more board members with educational and working backgrounds in Western countries.

However, the new decoupling policies, such as restrictions on educational exchanges from China and Western countries, do not help promote global environmental standards. On the contrary, those policies will discourage Chinese firms from complying with global standards by debilitating the effect of Western linkages on Chinese firms.

Finally, this research suggests that state capitalism might not always be the best institutional design for emerging economies to promote green finance. This study notices that state capitalism could positively or negatively affect the development of green finance. To illustrate, although state capitalism can quickly mobilize banking sector and state-own enterprises to reverberate the government's policy signals, it may

fail to form a more inclusive system to allow more diverse participation of market actors. Thus, even though state capitalism could play initiating crucial starter role, policymakers still need to bring in other important factors, such as transnational climate governance, to strengthen the market force and innovation.

Limitations and Future Research Directions

This research has many limitations. This section discusses these constraints and future research directions. First, the data collection process in this research was negatively affected by the outbreak of Covid-19. Specifically, this research lacked accesses to directly interview with Chinese green bond issuers. Also, this dissertation is unable to expand the dataset in the period from 2019 to 2021. If Covid-19 would continue to exist and spread around the world, future research could consider switching from conventional fieldwork to online surveys for firms or conduct virtual or remote fieldwork. Furthermore, when the data become available, future studies could further explore whether the shock of Covid-19 challenges the framework and findings of this dissertation.

Second, the dependent variable of this research explores whether Chinese green bond issuers adopt external reviews and meet the CBI's definition of green bond. However, the idea of compliance with global green bond standards might include other firms' behaviors. The other important dimensions of compliance include whether green bond issuers publish post-issuance reporting; the quality of the post-issuance reporting; whether and how the reporting covers impact reporting (Almeida & Lonikar, 2021). In

China, studies have reported that the quality of the post-issuance reporting varies among green bonds (Escalante et al., 2020a; Shanghai Qingyue, 2020), but we still do not know much about what explains the variation. Future studies can expand the measurements of firms' compliance to provide a better understanding of the implementation of global private standards on the ground.

Third, this study mainly focuses on regulatory agencies at the central level. That is because the initial development of the green bond market in China is, to a great extent, promoted and regulated by central level of regulatory agencies. However, as the central government has encouraged local innovation of green finance through establishing green finance innovation pilot zones since 2017, local governments could affect green bond issuers more in the future. For instance, Shenzhen has just announced "Shenzhen Special Economic Zone Green Finance Regulations" in November 2020, which is the first law in the field of green finance. Moreover, one study found that the strength of local governments' green finance policies was positively associated with the number and scale of green bond issuance in the province (SynTao Green Finance, 2020). Future research could further reveal how local governments affect green bond issuers' compliance with global standards.

Fourth, although I argue that the framework of this dissertation may be generalized, this study only explores the case of green bonds in India and organic food in China. The number of cases is still not large enough, and the case studies only provide preliminary evidence for some hypotheses. To enhance the external validity of this research further, future research could use the medium-N design and multiple case studies, covering more cases in emerging economies and issue areas.

Fifth, during the time this study was being conducted, some scholars has pointed out that China's state capitalism has changed to a peculiar party-driven system, described as "party-state capitalism"(Pearson et al., 2021). Since green finance policies have been supported by the top leadership, the resurgent party monitoring and controls on firms could result in more robust conditions for firms' campaign-style pursue of green finance, such as the recent development of carbon-neutral bonds. However, it is also likely that the rising Chinese nationalism, party control, and demand of political correctness raised by the CCP could attenuate the effects of Western linkages in firms, weakening firms' incentives to comply with global green bond standards. As this study does not carefully trace the dynamics of party-state capitalism, future studies could contribute to this issue by investigating how party-state capitalism affects the development of green finance and firms' compliance with global green bond standards.

Finally, this dissertation centers on the issue of firms' compliance with global green bond standards; however, it does not explore what the broader impacts are, including intentional and unintentional consequences of compliance. Future studies can further assess whether and how compliance with global standards affects policy and environmental outcomes by addressing some questions, for instance, do the certified green bonds accelerate energy transition or produce additional environmental benefits in China? Do certified green bonds have any social impacts on vulnerable groups? Addressing these questions will enable us to evaluate whether compliance with global standards truly matters.

Appendices

Appendix 1 Types of Green Bond

Table A. 1 Types of Green Bond

1. Corporate bond: A "use of proceeds" bond issued by a corporate entity with recourse to the issuer in the case of default on interest payments or on return of principal. This category includes bonds issued by "YieldCo" vehicles to finance asset acquisitions.
2. Project bond: A bond backed by single or multiple projects for which the investor has direct exposure to the risk of the project, with or without recourse to the bond issuer.
3. Asset-backed security (ABS): A bond collateralised by one or more specific projects, usually providing recourse only to the assets, except in the case of covered bonds (included in this category). For covered bonds, the primary recourse is to the issuing entity, with secondary recourse to an underlying cover pool of assets, in the event of default of the issuer.
4. Supranational, sub-sovereign and agency (SSA) bond: Bonds issued by international financial institutions (IFIs) such as the World Bank and the European Investment Bank (i.e. "supranational issuers"). SSA bonds have features similar to a corporate bond relating to "use of proceeds" and recourse to the issuer. Agency bonds are included in this category (e.g. issuance by export-import banks), as are sub-sovereign national development banks (e.g. the German KfW).
5. Municipal bond: Bonds issued by a municipal government, region or city.
6. Sovereign bond: Bonds issued by a national government. In December 2016, Poland issued the first sovereign green bond, followed by the launch of a sovereign green bond by France in January 2017. A number of other countries also have indicated their intention to issue sovereign green bonds.
7. Financial sector bond: A type of corporate bond issued by a financial institution to raise capital specifically to finance "on-balance sheet lending" (i.e. to provide loans) to green activities (e.g. ABN AMRO or Agricultural Bank of China). This type of bond is considered separately for the purposes of OECD scenario modelling to retain a distinction between financial sector bond issuances which finance lending and those which directly finance green investments.

Source: OECD (2017)

Appendix 2 Interview List

1. Interview with expert at Shanghai Qingyue, online, 04/20/2021
2. Interview with expert at Green Peace, online, 04/14/2021
3. Interview with manager at Everbright Securities, online, 04/06/2021
4. Interview with expert at GFD Center, Tsinghua University, Beijing, 08/21/2019
5. Interview with expert at IIGF, CUFE, Beijing, 08/19/2019
6. Interview with expert at IIGF, CUFE, Beijing, 08/19/2019
7. Interview with expert at IIGF, CUFE, Beijing, 08/16/2019
8. Interview with expert at Green Peace, Beijing, 08/16/2019
9. Interview with expert at CECEP Consulting Co. Ltd., Beijing, 08/15/2019
10. Interview with expert at IIGF, CUFE, Beijing, 08/15/2019
11. Interview with expert at IIGF, CUFE, Beijing, 08/12/2019
12. Interview with expert at CCXI Credit Rating Co. Ltd., Beijing, 08/9/2019
13. Interview with expert at CBI, Beijing, 08/08/2019
14. Interview with expert at IIGF, CUFE, Beijing, 08/08/2019
15. Interview with expert at IIGF, CUFE, Beijing, 08/07/2019
16. Interview with expert at RDCY, Renmin University, Beijing, 08/07/2018
17. Interview with expert at IIGF, CUFE, Beijing, 08/06/2019
18. Interview with expert at SPPM, Tsinghua University, Beijing, 08/02/2019
19. Interview with expert at IIGF, CUFE, Beijing, 08/01/2019
20. Interview with manager at Minsheng Securities, Beijing, 08/01/2019
21. Interview with expert at IIGF, CUFE, Beijing, 07/25/2019

22. Interview with manager at Minsheng Securities, 07/25/2019
23. Interview with expert at RDCY, Renmin University, Beijing, 07/19/2018
24. Interview with manager at Department of Green Finance, Industrial Bank, Beijing, 07/19/2018
25. Interview with Consulting Director at SynTao Green Finance, Beijing, 07/17/2018

Appendix 3 Bond Type in China

Table A3. 1 Bond Type in China

Issuer Type	Sub-type
1. Government bond	Central government bond (Treasury bonds) Local government bond
2. Central bank bill	
3. Government-backed agency bond	Railway bond Central Huijin bond
4. Financial bond	Policy bank financial bond Commercial bank bond Non-bank financial bond
5. Enterprise bond	Enterprise bond • SME collective bond • Project revenue bond • Revenue bond Non-financial enterprise debt financing instrument • Short-term commercial paper • Super-short-term commercial paper • Medium-term note • Perpetual medium-term note • SME collective note • Private placement note • Asset-backed note • Project revenue note Corporate bond Convertible corporate bond Private placement SME bond
6. Asset-backed security (ABS)	Credit asset-backed security Enterprise asset-backed security
7. Panda bond	
8. Interbank negotiable certificate of deposit	

Source: CCDC (2017)

Appendix 4 Data and Coding Issues

Sample Selection

There are several agencies that have constructed green bond datasets in China. For example, the Wind database, Bloomberg, and China Financial Information --- Green Finance (绿色金融-中国金融信息网) all have their lists of Chinese green bonds. However, the lists from these datasets are not entirely compatible, and their selection criteria are not transparent. In addition, only CBI's dataset includes the main dependent variable of this study. Thus, this study finally decided to use the CBI's data as the primary sample, and then combined it with other datasets.

The CBI's dataset includes 288 green bonds between 2016 and 2018. However, some green bonds have missing values in crucial variables. After removing the green bonds with missing values, the final sample of this study includes 224 green bonds. Because the CBI only provides to universities in its Partners Program since 2019, this study is unable to receive the green bond data between 2019 and 2021 from the CBI.

Coding of Political Ties

This study measures firms' political connections by counting the number of board of directors, board of supervisors, and managers that have worked in the governmental agencies. If the person had worked in the governmental agencies, I coded it as 1. Then, I aggregated the total number of members with political connections in a firm. In other words, I did not further distinguish the importance of positions or

measure multiple ties by person. Based on this coding rule, some firms have more political connections than others. For example, China Development Bank, the Export-Import Bank of China, and the Agricultural Bank of China are the green bond issuers with the highest political connections. Yet, Xinjiang Goldwind Science & Technology Co., Ltd. and Beijing Enterprises Water Group Limited have few political connections.

Appendix 5 Alternative Models

Different Measurement of DV

Table A5. 1 Estimates from Logistic Regression

	Model 1	Model 2	Model 3	Model 4
Regulation	-2.95376***		-4.65361***	-7.99986***
	(0.789)		(1.071)	(2.430)
Competition	5.65046**		4.71393**	5.58899*
	(2.250)		(2.370)	(3.002)
Location	0.91104		1.64539**	1.93290**
	(0.605)		(0.721)	(0.802)
Western linkage		0.62803***	0.55375***	0.41049**
		(0.191)	(0.190)	(0.176)
Western linkage* Regulation				2.14466**
				(0.850)
Political ties		0.28771**	0.26285**	0.25146**
		(0.120)	(0.123)	(0.121)
Central state-owned		1.77350***	1.85781***	1.86624***
		(0.558)	(0.631)	(0.702)
Firm age		-0.08268***	-0.09815***	-0.11088***
		(0.023)	(0.028)	(0.032)
Firm ROE		1.12295***	1.00548**	0.92285**
		(0.383)	(0.397)	(0.400)
Listed		0.27210	0.51680	0.53013
		(0.535)	(0.575)	(0.547)
Firm size		-0.08531	-0.09455	-0.11670
		(0.113)	(0.118)	(0.122)
ESG 2016		0.03257	0.03393	0.03080
		(0.022)	(0.025)	(0.025)
Issuer rating		-3.72606***	-4.53463***	-5.58049***
		(0.888)	(1.088)	(1.750)
Bond rating		4.46001***	5.23835***	6.30925***
		(0.925)	(1.243)	(1.902)
Scale		-0.84397**	-0.53971	-0.38843
		(0.354)	(0.374)	(0.359)
Maturity		-1.24568**	0.22209	0.46274
		(0.621)	(0.727)	(0.821)
Coupon rate		-3.15771*	-1.96023	-1.75802
		(1.637)	(1.509)	(1.513)
Year dummies	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes
Constant	-3.93653**	5.07935*	-3.72022	-4.59171
	(1.883)	(3.072)	(3.106)	(3.264)
Observations	220	224	224	224
Pseudo R2	0.185	0.332	0.423	0.450
Wald chi2	38.30	51.58	66.60	59.11
Log pseudo likelihood	-124.30	-103.70	-89.49	-85.35

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Multilevel Analysis

Table A5.2 displays the result from the multilevel fixed-effects ordered logistic regression (random intercept model). I have tested the effect of different clusters: Model 1 uses types of bonds as the independent clusters; Model 2 assumes sectors as the clusters; and Model 3 treats use of proceeds as the clusters. The results from the three models suggest that main hypotheses are not rejected across different model specifications. However, the likelihood-ratio tests for the three models are not significant, which indicates that there is not enough variability between clusters to favor a mixed-effects ordered logistic regression over a standard ordered logistic regression.

Table A5. 2 Estimates from Multilevel Ordered Logistic Regression

	Model 1 Bond type	Model 2 Sector	Model 3 Use of proceeds
Regulation	-6.32971***	-5.58896***	-6.44933***
	(1.093)	(0.939)	(1.139)
Location	2.38823***	1.68985***	2.24997***
	(0.696)	(0.547)	(0.710)
Competition	2.01825	1.84108*	3.93431*
	(1.637)	(1.116)	(2.157)
Western linkages	0.43099***	0.39222***	0.42303***
	(0.125)	(0.117)	(0.125)
Central state-owned	1.86674***	1.51673***	2.06505***
	(0.607)	(0.513)	(0.642)
Political ties	0.19296**	0.13926*	0.18933**
	(0.082)	(0.075)	(0.083)
Firm age	-0.05427***	-0.04100**	-0.08323***
	(0.020)	(0.018)	(0.024)
Firm ROE	0.30972	-0.06701	0.33150
	(0.304)	(0.252)	(0.308)
Listed	0.12749	0.09420	0.22325
	(0.477)	(0.454)	(0.490)
Firm size	0.03820	0.02878	0.03723
	(0.100)	(0.096)	(0.102)
ESG 2016	0.01115	0.01030	0.01642
	(0.019)	(0.017)	(0.019)
Issuer rating	-3.64702***	-2.68036**	-3.56495***
	(1.402)	(1.121)	(1.291)
Bond rating	4.71193***	3.78253***	4.67932***

	(1.425)	(1.185)	(1.333)
Scale	-0.62133**	-0.52765**	-0.60300**
	(0.262)	(0.240)	(0.262)
Maturity	0.50977	1.23182**	0.40101
	(0.649)	(0.534)	(0.654)
Couponrate	-1.26885	-0.49399	-1.35675
	(1.481)	(1.129)	(1.500)
Year dummies	Yes	Yes	Yes
Sector dummies	Yes	No	Yes
Observations	224	224	224
Number of groups	6	11	8
Log likelihood	-134.3	-140.8	-131.9
Wald chi2	86.02	87.98	85.59

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Bibliography

21st Century Business Herald. (2021, July 8). Yang hang zhi jie kao he 24 jia yin hang lv se jin rong xia ban nian lv se zhai quan jiang ying lai kuo rong [The central bank directly assessed 24 banks' green finance, and green bonds will usher in expansion in the second half of the year]. https://finance.sina.com.cn/esg/investment/2021-07-08/doc-ikqcfnca5611534.shtml

Abbott, K. W., Green, J. F., & Keohane, R. O. (2016). Organizational ecology and institutional change in global governance. International Organization, 70(2), 247–277.

Adolph, C., Quince, V., & Prakash, A. (2017). The Shanghai Effect: Do Exports to China Affect Labor Practices in Africa? World Development, 89, 1–18. https://doi.org/10.1016/j.worlddev.2016.05.009

Aguilera, R. V., Capapé, J., & Santiso, J. (2016). Sovereign Wealth Funds: A Strategic Governance View. Academy of Management Perspectives, 30(1), 5–23. https://doi.org/10.5465/amp.2013.0055

Aizawa, M., & Yang, C. (2010). Green credit, green stimulus, green revolution? China's mobilization of banks for environmental cleanup. The Journal of Environment & Development, 19(2), 119–144.

Aklin, M., & Urpelainen, J. (2013). Political competition, path dependence, and the strategy of sustainable energy transitions. American Journal of Political Science, 57(3), 643–658.

Albino-Pimentel, J., Anand, R., & Dussauge, P. (2018). How do firm political connections impact foreign acquisitions? The effects of decision makers' political and firm embeddedness. Global Strategy Journal, 8(3), 421–446.

Ali, W., & Frynas, J. G. (2018). The Role of Normative CSR-Promoting Institutions in Stimulating CSR Disclosures in Developing Countries. Corporate Social Responsibility and Environmental Management, 25(4), 373–390. https://doi.org/10.1002/csr.1466

Ali, W., Frynas, J. G., & Mahmood, Z. (2017). Determinants of Corporate Social Responsibility (CSR) Disclosure in Developed and Developing Countries: A Literature Review. Corporate Social Responsibility and Environmental Management, 24(4), 273–294. https://doi.org/10.1002/csr.1410

Alizada, K. (2018). Rethinking the diffusion of renewable energy policies: A global assessment of feed-in tariffs and renewable portfolio standards. Energy Research & Social Science, 44, 346–361. https://doi.org/10.1016/j.erss.2018.05.033

Almeida, M. (2020). Green Bonds Global State of the Market 2019. Climate Bonds Initiative.

Almeida, M., Filkova, M., Harrison, C., & Sette, P. (2019). Green Bond European Investor Survey. Climate Bonds Initiative.

Almeida, M., & Lonikar, P. (2021). Post-Issuance Reporting in the Green Bond Market 2021. Climate Bonds Initiative.

AMAC. (2020). Zhong guo ji jin ye ESG tou zi zhuan ti diao zha bao gao 2019 [Special Survey Report on ESG Investment in China's Fund Industry (2019)].

https://www.investor.org.cn/information_release/news_release_from_authorities/hyxhfb/202005/P020200511496352679242.pdf

Amran, A., & Haniffa, R. (2011). Evidence in development of sustainability reporting: A case of a developing country. Business Strategy and the Environment, 20(3), 141–156. https://doi.org/10.1002/bse.672

Amran, A., Lee, S. P., & Devi, S. S. (2014). The Influence of Governance Structure and Strategic Corporate Social Responsibility Toward Sustainability Reporting Quality. Business Strategy and the Environment, 23(4), 217–235. https://doi.org/10.1002/bse.1767

Andonova, L. B. (2014). Boomerangs to partnerships? Explaining state participation in transnational partnerships for sustainability. Comparative Political Studies, 47(3), 481–515.

Andonova, L. B., Hale, T. N., & Roger, C. B. (2017). National Policy and Transnational Governance of Climate Change: Substitutes or Complements? International Studies Quarterly, 61(2), 253–268. https://doi.org/10.1093/isq/sqx014

Andonova, L. B., & Sun, Y. (2019). Private Governance in Developing Countries: Drivers of Voluntary Carbon Offset Programs. Global Environmental Politics, 19(1), 99–122. https://doi.org/10.1162/glep_a_00496

Anh Tu, C., Sarker, T., & Rasoulinezhad, E. (2020). Factors Influencing the Green Bond Market Expansion: Evidence from a Multi-Dimensional Analysis. Journal of Risk and Financial Management, 13(6), 126. https://doi.org/10.3390/jrfm13060126

AsianBondsOnline. (2021). Detailed Guidance for Issuing Green Bonds. Green Bond Hub. https://asianbondsonline.adb.org/green-bonds/gbfactsheet1.html

Auld, G. (2014). Constructing private governance: The rise and evolution of forest, coffee, and fisheries certification. Yale University Press.

Auld, G., Gulbrandsen, L. H., & McDermott, C. L. (2008). Certification schemes and the impacts on forests and forestry. Annual Review of Environment and Resources, 33.

Avant, D. D., Finnemore, M., & Sell, S. K. (2010). Who governs the globe? (Vol. 114). Cambridge University Press.

Azhgaliyeva, D., Kapoor, A., & Liu, Y. (2020). Green Bonds for Financing Renewable Energy and Energy Efficiency in Southeast Asia: A Review of Policies [1073]. ADBI. https://www.adb.org/sites/default/files/publication/562116/adbi-wp1073.pdf

BAIC. (2016). 2016 nian di yi qi bei jing qi che gu fen you xian gong si lv se zhai quan mu ji shuo ming shu[The Beijing Automobile Co., Ltd. Green Bond Prospectus in the first term of 2016].

BAIC. (2017). 2017 nian bei jing qi che gu fen you xian gong si lv se zhai quan mu ji shuo ming shu [The Beijing Automobile Co., Ltd. Green Bond Prospectus in 2017].

BAIC. (2021). Periodic Report. Investor Relation. http://www.baicmotor.com/en/ir/dqbg.html

Baker, M., Bergstresser, D., Serafeim, G., & Wurgler, J. (2018). Financing the response to climate change: The pricing and ownership of US green bonds. National Bureau of Economic Research.

Bal, Y., Faure, M., & Liu, J. (2014). The role of China's banking sector in providing green finance. Duke Envtl. L. & Pol'y F., 24, 89.

Banga, J. (2019). The green bond market: A potential source of climate finance for developing countries. Journal of Sustainable Finance & Investment, 9(1), 17–32. https://doi.org/10.1080/20430795.2018.1498617

Baron, D. P. (2001). Private Politics, Corporate Social Responsibility, and Integrated Strategy. Journal of Economics & Management Strategy, 10(1), 7–45. https://doi.org/10.1111/j.1430-9134.2001.00007.x

Bartley, T. (2007). Institutional Emergence in an Era of Globalization: The Rise of Transnational Private Regulation of Labor and Environmental Conditions. American Journal of Sociology, 113(2), 297–351. https://doi.org/10.1086/518871

Bartley, T. (2010). Transnational private regulation in practice: The limits of forest and labor standards certification in Indonesia. Business and Politics, 12(3), 1–34.

Bartley, T. (2011). Transnational governance as the layering of rules: Intersections of public and private standards. Theoretical Inquiries in Law, 12(2), 517–542.

Bartley, T., & Lu, Z. (2012). Opening the'Black Box': Transnational Private Certification of Labor Standards in China.

Baumann-Pauly, D., Wickert, C., Spence, L. J., & Scherer, A. G. (2013). Organizing corporate social responsibility in small and large firms: Size matters. Journal of Business Ethics, 115(4), 693–705.

Beeson, M. (2010). The coming of environmental authoritarianism. Environmental Politics, 19(2), 276–294. https://doi.org/10.1080/09644010903576918

Bell, S. 1954-, & Feng, Hui. (2013). The rise of the People's Bank of China: The politics of institutional change (Vol. 1–1 online resource (viii, 376 pages) : illustrations). Harvard University Press. https://doi.org/10.4159/harvard.9780674073593

Ben Barka, H., & Dardour, A. (2015). Investigating the relationship between director's profile, board interlocks and corporate social responsibility. Management Decision, 53(3), 553–570. https://doi.org/10.1108/MD-12-2013-0655

Berliner, D., & Prakash, A. (2013). Signaling Environmental Stewardship in the Shadow of Weak Governance: The Global Diffusion of ISO 14001. Law & Society Review, 47(2), 345–373. https://doi.org/10.1111/lasr.12015

Berliner, D., & Prakash, A. (2014). Public Authority and Private Rules: How Domestic Regulatory Institutions Shape the Adoption of Global Private Regimes. International Studies Quarterly, 58(4), 793–803. https://doi.org/10.1111/isqu.12166

Black, J. (2001). Decentring regulation: Understanding the role of regulation and self-regulation in a 'post-regulatory'world. Current Legal Problems, 54(1), 103–146.

Bliss, M. A., & Gul, F. A. (2012). Political connection and cost of debt: Some Malaysian evidence. Journal of Banking & Finance, 36(5), 1520–1527.

Bodin, Ö., & Crona, B. I. (2009). The role of social networks in natural resource governance: What relational patterns make a difference? Global Environmental Change, 19(3), 366–374.

Boesso, G., & Kumar, K. (2007). Drivers of corporate voluntary disclosure: A framework and empirical evidence from Italy and the United States. Accounting, Auditing & Accountability Journal, 20(2), 269–296. https://doi.org/10.1108/09513570710741028

Boubakri, N., Mansi, S. A., & Saffar, W. (2013). Political institutions, connectedness, and corporate risk-taking. Journal of International Business Studies, 44(3), 195–215. https://doi.org/10.1057/jibs.2013.2

Boulle, B., Dai, L., & Meng, A. (2017). China Green Bond Market 2016. CBI.

Brammer, S., & Pavelin, S. (2008). Factors influencing the quality of corporate environmental disclosure. Business Strategy and the Environment, 17(2), 120–136. https://doi.org/10.1002/bse.506

Breetz, H., Mildenberger, M., & Stokes, L. (2018). The political logics of clean energy transitions. Business and Politics, 20(4), 492–522. https://doi.org/10.1017/bap.2018.14

Bremmer, I. (2010). The end of the free market: Who wins the war between states and corporations? Portfolio/Penguin.

Bruton, G. D., Peng, M. W., Ahlstrom, D., Stan, C., & Xu, K. (2015). State-owned enterprises around the world as hybrid organizations. Academy of Management Perspectives, 29(1), 92–114.

Burck, J., Hagen, U., Marten, F., Höhne, N., & Bals, C. (2019). The Climate Change Performance Index 2019. https://germanwatch.org/en/16073

Büthe, T. (2010). Global private politics: A research agenda. Business and Politics, 12(3), 1–24.

Büthe, T., & Mattli, W. (2011). The New Global Rulers: The Privatization of Regulation in the World Economy. Princeton University Press.

Camfferman, K., & Zeff, S. A. (2007). Financial reporting and global capital markets: A history of the International Accounting Standards Committee, 1973-2000. Oxford University Press. http://catdir.loc.gov/catdir/toc/ecip072/2006030626.html

Cao, X., & Ward, H. (2017). Transnational Climate Governance Networks and Domestic Regulatory Action. International Interactions, 43(1), 76–102. https://doi.org/10.1080/03050629.2016.1220162

Carney, R. W. (2012). Political hierarchy and finance: The politics of China's financial development. In A. Walter & X. Zhang (Eds.), East Asian Capitalism: Diversity, Continuity, and Change (pp. 158–178). Oxford University Press.

Cashore, B. W., Auld, G., & Newsom, D. (2004). Governing through markets: Forest certification and the emergence of non-state authority. Yale University Press.

CBI. (2017). Bonds and Climate Change—State of the Market 2017 India Update. CBI.

CBI. (2018). India Country Briefing. CBI.

CBI. (2019). Green Bond Fact Sheet: Jiangsu Financial Leasing. https://www.climatebonds.net/files/files/2019-04%20CN%20Jiangsu%20Financial%20Leasing.pdf

CCDC. (2017). Overview of China's Bond Market.

Chams, N., & García-Blandón, J. (2019). Sustainable or not sustainable? The role of the board of directors. Journal of Cleaner Production, 226, 1067–1081. https://doi.org/10.1016/j.jclepro.2019.04.118

Chan, M. C., Watson, J., & Woodliff, D. (2014). Corporate Governance Quality and CSR Disclosures. Journal of Business Ethics, 125(1), 59–73. https://doi.org/10.1007/s10551-013-1887-8

Chatterjee, E., & Chandra, R. (2020). The rusty frame of Indian state capitalism. A DELICATE BALANCE a Symposium on Untangling Business-State Relations in India. https://www.india-seminar.com/2020/734/734_elizabeth_and_rohit.htm

Chen, A., Scott, S., & Si, Z. (2018). Top-down initiatives: State support for ecological and organic agriculture in China. In Organic Food and Farming in China (pp. 38–59). Routledge.

Cheung, Y.-L., Kong, D., Tan, W., & Wang, W. (2015). Being Good When Being International in an Emerging Economy: The Case of China. Journal of Business Ethics, 130(4), 805–817. https://doi.org/10.1007/s10551-014-2268-7

China Economic Herald. (2016, April 15). Guo nei shou zhi lv se qi ye zhai hua luo bei qi [The first green corporate debt in China was BAIC]. Tencent Finance. https://finance.qq.com/a/20160415/054452.htm

Chinese Banker Survey Report. (2017, April 2). Zhong guo yin hang jia diao zha bao gao 2016: Lv se jin rong fa zhan qian jing yu ce ["Chinese Banker Survey Report (2016)": Forecast of the Development Prospects of Green Finance]. http://greenfinance.xinhua08.com/a/20170402/1697471.shtml?f=arelated

Christmann, P., & Taylor, G. (2001). Globalization and the Environment: Determinants of Firm Self-Regulation in China. Journal of International Business Studies, 32(3), 439–458. https://doi.org/10.1057/palgrave.jibs.8490976

Chu, M. (2020). Horses for courses: China's accommodative approach to food standard-setting in response to the internationalization of regulation. Regulation & Governance, 14(3), 514–530. https://doi.org/10.1111/rego.12228

Cia Alves, E. E., Steiner, A., de Almeida Medeiros, M., & da Silva, M. E. A. (2019). From a breeze to the four winds: A panel analysis of the international diffusion of renewable energy incentive policies (2005–2015). Energy Policy, 125, 317–329. https://doi.org/10.1016/j.enpol.2018.10.064

CICC. (2021, April 15). lv se zhai quan de zhong guo shi jian, zhu li quan qiu ke chi xu fa zhan yi wen du dong zhong guo lv se zhai quan shi chang [The Chinese practice of green Bonds to help Global Sustainable Development—An article on understanding the Chinese Green Bond Market]. Sina Finance.

https://finance.sina.com.cn/money/bond/2021-04-15/doc-ikmxzfmk7034331.shtml

Climate Bonds Initiative. (2020). Climate Bonds Initiative Green Bond Database Methodology.

Climate Change Laws of the World database. (2020). Grantham Research Institute on Climate Change and the Environment and Sabin Center for Climate Change Law. https://www.lse.ac.uk/granthaminstitute/

Collins, N., & Gottwald, J.-C. (2011). The Chinese Model of the Regulatory State. In Handbook on the Politics of Regulation (pp. 142–155). Edward Elgar Publishing.

Collins, N., & Gottwald, J.-C. (2014). Market Creation by Leninist Means: The Regulation of Financial Services in the People's Republic of China. Asian Studies Review, 38(4), 620–638. https://doi.org/10.1080/10357823.2014.964173

Corbett Charles J. & Kirsch David A. (2009). International diffusion of iso 14000 certification. Production and Operations Management, 10(3), 327–342. https://doi.org/10.1111/j.1937-5956.2001.tb00378.x

CPI. (2020). India green finance Landscape.

CSRC. (2021). Zheng quan gong si ming lu [List of Securities Companies]. CSRC. http://www.csrc.gov.cn/pub/zjhpublic/G00306205/201509/t20150924_284310.htm

Cui, Y., Geobey, S., Weber, O., & Lin, H. (2018). The Impact of Green Lending on Credit Risk in China. Sustainability, 10(6), 2008. https://doi.org/10.3390/su10062008

Cull, R., Peria, M. S. M., & Verrier, J. (2018). Bank ownership: Trends and implications. The World Bank.

Cutler, A. C., Haufler, V., & Porter, T. (1999). Private authority and international affairs. Suny Press.

Darnall, N., & Edwards Jr, D. (2006). Predicting the cost of environmental management system adoption: The role of capabilities, resources and ownership structure. Strategic Management Journal, 27(4), 301–320.

De Graaff, N. (2020). China Inc. Goes global. Transnational and national networks of China's globalizing business elite. Review of International Political Economy, 27(2), 208–233.

de Villiers, C., Naiker, V., & van Staden, C. J. (2011). The Effect of Board Characteristics on Firm Environmental Performance. Journal of Management, 37(6), 1636–1663. https://doi.org/10.1177/0149206311411506

Dean, T. J., & Brown, R. L. (1995). Pollution Regulation as a Barrier to New Firm Entry: Initial Evidence and Implications for Future Research. Academy of Management Journal, 38(1), 288–303. https://doi.org/10.5465/256737

Deegan, C., & Blomquist, C. (2006). Stakeholder influence on corporate reporting: An exploration of the interaction between WWF-Australia and the Australian minerals industry. Accounting, Organizations and Society, 31(4), 343–372. https://doi.org/10.1016/j.aos.2005.04.001

Delmas, M. A. (2002). The diffusion of environmental management standards in Europe and in the United States: An institutional perspective. Policy Sciences, 35(1), 91–119. https://doi.org/10.1023/A:1016108804453

Delmas, M. A., & Burbano, V. C. (2011). The Drivers of Greenwashing. California Management Review, 54(1), 64–87. https://doi.org/10.1525/cmr.2011.54.1.64

Delmas, M., & Toffel, M. W. (2004). Stakeholders and environmental management practices: An institutional framework. Business Strategy and the Environment, 13(4), 209–222. https://doi.org/10.1002/bse.409

Delucchi, M. A., & Jacobson, M. Z. (2011). Providing all global energy with wind, water, and solar power, Part II: Reliability, system and transmission costs, and policies. Energy Policy, 39(3), 1170–1190.

Deng, P. (2012). The Internationalization of Chinese Firms: A Critical Review and Future Research*. International Journal of Management Reviews, 14(4), 408–427. https://doi.org/10.1111/j.1468-2370.2011.00323.x

Deng, Z., Tang, D. Y., & Zhang, Y. (2020). Is "Greenness" Priced in the Market? Evidence from Green Bond Issuance in China. The Journal of Alternative Investments, 23(1), 57–70. https://doi.org/10.3905/jai.2020.1.097

Deschryver, P., & de Mariz, F. (2020). What Future for the Green Bond Market? How Can Policymakers, Companies, and Investors Unlock the Potential of the Green Bond Market? Journal of Risk and Financial Management, 13(3), 61. https://doi.org/10.3390/jrfm13030061

DiMaggio, P. J., & Powell, W. W. (1983). The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. American Sociological Review, 48(2), 147–160. https://doi.org/10.2307/2095101

Dingwerth, K. (2007). The new transnationalism: Transnational governance and democratic legitimacy. Palgrave Macmillan. http://catdir.loc.gov/catdir/enhancements/fy0807/2007051156-t.html

Djelic, M.-L., & Sahlin-Andersson, K. (2006). Transnational governance: Institutional dynamics of regulation. Cambridge University Press.

Donaldson, T., & Preston, L. E. (1995). The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications. Academy of Management Review, 20(1), 65–91. https://doi.org/10.5465/amr.1995.9503271992

Dong, S., Burritt, R., & Qian, W. (2014). Salient stakeholders in corporate social responsibility reporting by Chinese mining and minerals companies. Journal of Cleaner Production, 84, 59–69. https://doi.org/10.1016/j.jclepro.2014.01.012

Dong, Y. (2015). Zhong guo zhai shi da ge ming [China's Bond Market Revolution]. China Finance Online. http://bond.jrj.com.cn/2015/05/27082319273541.shtml?to=pc

Dorfleitner, G., Utz, S., & Zhang, R. (2021). The pricing of green bonds: External reviews and the shades of green. Review of Managerial Science. https://doi.org/10.1007/s11846-021-00458-9

Drezner, D., & Lu, M. (2009). How universal are club standards? Emerging markets and volunteerism. Voluntary Programs: A Club Theory Perspective, 181–206.

Dubash, N. K., & Morgan, B. (2013). The rise of the regulatory state of the south: Infrastructure and development in emerging economies. OUP Oxford.

Eaton, S. (2015). The Advance of the State in Contemporary China: State-market Relations in the Reform Era. Cambridge University Press.

Eckstein, D., Künzel, V., Schäfer, L., & Winges, M. (2019). Global Climate Risk Index 2020. German Watch. https://germanwatch.org/sites/germanwatch.org/files/20-2-01e%20Global%20Climate%20Risk%20Index%202020_14.pdf

Ehlers, T., & Packer, F. (2017). Green bond finance and certification. BIS Quarterly Review September.

EIB & CGFC. (2017). The need for a common language in Green Finance.

Elliott, C., & Zhang, L.-Y. (2019). Diffusion and innovation for transition: Transnational governance in China's green bond market development. Journal of Environmental Policy & Planning, 21(4), 391–406. https://doi.org/10.1080/1523908X.2019.1623655

Escalante, D., Choi, J., & Chin, N. (2020a). MRV System Design: Recommendations for Chinese Green Bonds. CPI.

Escalante, D., Choi, J., & Chin, N. (2020b). The State and Effectiveness of the Green Bond Market in China. CPI.

Espach, R. (2009). Private environmental regimes in developing countries: Globally sown, locally grown. Springer.

Faccio, M., Masulis, R. W., & McConnell, J. J. (2006). Political connections and corporate bailouts. The Journal of Finance, 61(6), 2597–2635.

Fadly, D. (2019). Low-carbon transition: Private sector investment in renewable energy projects in developing countries. World Development, 122, 552–569. https://doi.org/10.1016/j.worlddev.2019.06.015

Faske, B. (2018). Turning Billions into (Green) Trillions: Tracking the Growth and Development of the Green Bond Market in China, France, India, and the United States. Tulane Environmental Law Journal, 31(2), 293–325.

Financial Times. (2021, June 13). Shen geng lv se jin rong zhu li lv se fa zhan ma an shan nong shang yin hang chi xu tui jin lv se zhuan xing ji shi [Deepen green finance and help green development Documentary of Rural Commercial Bank of Maanshan Continuing to promote Green Transformation]. China Financial News Network. https://www.financialnews.com.cn/ncjr/nsh/202106/t20210603_220231.html

Fisher, R. (1981). Improving compliance with international law (Vol. 14). Univ of Virginia Press.

Fisman, R. (2001). Estimating the value of political connections. American Economic Review, 91(4), 1095–1102.

Flammer, C. (2021). Corporate green bonds. Journal of Financial Economics. https://doi.org/10.1016/j.jfineco.2021.01.010

Foot, R., & Walter, A. (2011). China, the United States, and global order. Cambridge University Press.

Fouilleux, E., & Loconto, A. (2017). Voluntary standards, certification, and accreditation in the global organic agriculture field: A tripartite model of techno-politics. Agriculture and Human Values, 34(1), 1–14.

Frank, K. A., & Yasumoto, J. Y. (1998). Linking action to social structure within a system: Social capital within and between subgroups. American Journal of Sociology, 104(3), 642–686.

Fransen, L. (2011). Why Do Private Governance Organizations Not Converge? A Political–Institutional Analysis of Transnational Labor Standards Regulation. Governance, 24(2), 359–387. https://doi.org/10.1111/j.1468-0491.2011.01519.x

Fransen, L., & Conzelmann, T. (2015). Fragmented or cohesive transnational private regulation of sustainability standards? A comparative study. Regulation & Governance, 9(3), 259–275. https://doi.org/10.1111/rego.12055

Freeman, R. E. (1994). The Politics of Stakeholder Theory: Some Future Directions. Business Ethics Quarterly, 4(4), 409–421. https://doi.org/10.2307/3857340

Frooman, J. (1999). Stakeholder Influence Strategies. Academy of Management Review, 24(2), 191–205. https://doi.org/10.5465/amr.1999.1893928

Fu Yishu, Lee Shih-Cheng, Xu Lei, & Zurbruegg Ralf. (2015). The Effectiveness of Capital Regulation on Bank Behavior in China. International Review of Finance, 15(3), 321–345. https://doi.org/10.1111/irfi.12045

G20 Green Finance Study Group. (2016). Green Bonds: Country Experiences, Barriers and Options.

García-Canal, E., & Guillén, M. F. (2008). Risk and the strategy of foreign location choice in regulated industries. Strategic Management Journal, 29(10), 1097–1115.

Garcia-Johnson, R. (2000). Exporting environmentalism: US multinational chemical corporations in Brazil and Mexico. MIT Press.

GFTF. (2014). Establishing China's green financial system.

Gianfrate, G., & Peri, M. (2019). The green advantage: Exploring the convenience of issuing green bonds. Journal of Cleaner Production, 219, 127–135. https://doi.org/10.1016/j.jclepro.2019.02.022

Giorgi, A., & Michetti, C. (2021). Green Finance State of the Market: Japan. CBI.

Graaff, N. de. (2014). Global Networks and the Two Faces of Chinese National Oil Companies. Perspectives on Global Development and Technology, 13(5–6), 539–563. https://doi.org/10.1163/15691497-12341317

Gray, K., & Murphy, C. N. (2013). Introduction: Rising powers and the future of global governance. Third World Quarterly, 34(2), 183–193.

Graz, J.-C. (2021). Grounding the Politics of Transnational Private Governance: Introduction to the Special Section. New Political Economy, 0(0), 1–11. https://doi.org/10.1080/13563467.2021.1881472

Graz, J.-C., & Nölke, A. (2007). Transnational private governance and its limits. Routledge.

Green Finance Task Force. (2015). Establishing China's green financial system. People's Bank of China & United Nations Environment Programme: Beijing, China.

Green, J. F. (2013). Rethinking private authority: Agents and entrepreneurs in global environmental governance. Princeton University Press.

Greenhill, B., Mosley, L., & Prakash, A. (2009). Trade-based Diffusion of Labor Rights: A Panel Study, 1986–2002. American Political Science Review, 103(4), 669–690. https://doi.org/10.1017/S0003055409990116

Gruin, J. (2013). Asset or liability? The role of the financial system in the political economy of China's rebalancing. Journal of Current Chinese Affairs, 42(4), 73–104.

Gruin, J. (2019a). Communists constructing capitalism: State, market, and the Party in China's financial reform. Manchester University Press.

Gruin, J. (2019b). Financializing authoritarian capitalism: Chinese fintech and the institutional foundations of algorithmic governance. Finance and Society, 5(2), 84–104.

Gruin, J., & Knaack, P. (2020). Not Just Another Shadow Bank: Chinese Authoritarian Capitalism and the 'Developmental' Promise of Digital Financial Innovation. New Political Economy, 25(3), 370–387. https://doi.org/10.1080/13563467.2018.1562437

Gulati, R., Nohria, N., & Zaheer, A. (2000). Strategic Networks. Strategic Management Journal, 21(3), 203–215.

Guler, I., Guillén, M. F., & Macpherson, J. M. (2002). Global Competition, Institutions, and the Diffusion of Organizational Practices: The International Spread of ISO 9000 Quality Certificates. Administrative Science Quarterly, 47(2), 207–232. https://doi.org/10.2307/3094804

Guo, M., & Zheng, C. (2021). Foreign Ownership and Corporate Social Responsibility: Evidence from China. Sustainability, 13(2), 508. https://doi.org/10.3390/su13020508

Hachem, K. C., & Song, Z. M. (2016). Liquidity regulation and unintended financial transformation in China. National Bureau of Economic Research.

Hachenberg, B., & Schiereck, D. (2018). Are green bonds priced differently from conventional bonds? Journal of Asset Management, 19(6), 371–383.

Hadani, M., & Schuler, D. A. (2013). In search of El Dorado: The elusive financial returns on corporate political investments. Strategic Management Journal, 34(2), 165–181. https://doi.org/10.1002/smj.2006

Hadden, J. (2015). Networks in Contention. Cambridge University Press.

Hafner-Burton, E. M., Kahler, M., & Montgomery, A. H. (2009). Network analysis for international relations. International Organization, 63(3), 559–592.

Hainmueller, J., Hiscox, M. J., & Sequeira, S. (2014). Consumer Demand for Fair Trade: Evidence from a Multistore Field Experiment. The Review of Economics and Statistics, 97(2), 242–256. https://doi.org/10.1162/REST_a_00467

Hair, J. F., Anderson, R. E., Tatham, R. L., & Maxwell, M. Int. E. (1992). Multivariate data analysis: With readings. Macmillan.

Hale, T. (2016). “All Hands on Deck”: The Paris Agreement and Nonstate Climate Action. Global Environmental Politics, 16(3), 12–22.

Hale, T., & Held, D. (2012). Gridlock and Innovation in Global Governance: The Partial Transnational Solution. Global Policy, 3(2), 169–181. https://doi.org/10.1111/j.1758-5899.2011.00128.x

Hale, T., & Roger, C. (2017). Domestic politics and Chinese participation in transnational climate governance.

Hall, P. A. (1986). Governing the economy: The politics of state intervention in Britain and France. http://scholar.harvard.edu/hall/publications/governing-economy-politics-state-intervention-britain-and-france

Hall, R. B., & Biersteker, T. J. (2002). The emergence of private authority in the international system. In The Emergence of Private Authority in Global Governance (pp. 3–22).

Haniffa, R. M., & Cooke, T. E. (2005). The impact of culture and governance on corporate social reporting. Journal of Accounting and Public Policy, 24(5), 391–430. https://doi.org/10.1016/j.jaccpubpol.2005.06.001

Harrison, C. (2021). Green Bond Pricing in the Primary Market H2 2020. Climate Bonds Initiative.

Harrison, C., Muething, L., & Tukiainen, K. (2020). Green Bond Treasurer Survey. Climate Bonds Initiative.

Harrison, K. (2010). The Comparative Politics of Carbon Taxation. Annual Review of Law and Social Science, 6(1), 507–529. https://doi.org/10.1146/annurev.lawsocsci.093008.131545

Haufler, V. (2001). A public role for the private sector: Industry self-regulation in a global economy. Carnegie Endowment.

Haufler, V. (2003). Globalization and Industry Self-Regulation. In M. Kahler & D. A. Lake (Eds.), Governance in a Global Economy: Political Authority in Transition. Princeton University Press.

He, Z.-X., Xu, S.-C., Shen, W.-X., Long, R.-Y., & Chen, H. (2016). Factors that influence corporate environmental behavior: Empirical analysis based on panel data in China. Journal of Cleaner Production, 133, 531–543. https://doi.org/10.1016/j.jclepro.2016.05.164

Heggelund, G., Stensdal, I., Duan, M., & Wettestad, J. (2019). China's Development of ETS as a GHG Mitigating Policy Tool: A Case of Policy Diffusion or Domestic Drivers? Review of Policy Research, 36(2), 168–194. https://doi.org/10.1111/ropr.12328

Heilmann, S. (2005). Regulatory innovation by Leninist means: Communist Party supervision in China's financial industry. The China Quarterly, 181, 1–21.

Heilmann, S., & Shih, L. (2013). The rise of industrial policy in China, 1978-2012. Harvard-Yenching Institute Working Paper Series, 17(7), 1–24.

Heilmann Sebastian & Schulte-Kulkmann Nicole. (2011). The Limits of Policy Diffusion: Introducing International Norms of Anti-Money Laundering into China's Legal System. Governance, 24(4), 639–664. https://doi.org/10.1111/j.1468-0491.2011.01543.x

Helleiner, E., & Kirshner, J. (2014). The great wall of money: Power and politics in China's international monetary relations. Cornell University Press.

Henriques, I., & Sadorsky, P. (1996). The Determinants of an Environmentally Responsive Firm: An Empirical Approach. Journal of Environmental

Economics and Management, 30(3), 381–395. https://doi.org/10.1006/jeem.1996.0026

Hess, D. J. (2014). Sustainability transitions: A political coalition perspective. Research Policy, 43(2), 278–283.

Hillman, A. J. (2005). Politicians on the board of directors: Do connections affect the bottom line? Journal of Management, 31(3), 464–481.

Hirsch, P. M., & Lounsbury, M. (1997). Ending the family quarrel: Toward a reconciliation of "old" and "new" institutionalisms. American Behavioral Scientist, 40(4), 406–418.

Ho, V. H. (2018). Sustainable Finance & China's Green Credit Reforms: A Test Case for Bank Monitoring of Environmental Risk. Cornell International Law Journal, 51(3), 609–682.

Hochstetler, K. (2020). Political Economies of Energy Transition: Wind and Solar Power in Brazil and South Africa. Cambridge University Press.

Hochstetler, K., & Kostka, G. (2015). Wind and Solar Power in Brazil and China: Interests, State–Business Relations, and Policy Outcomes. Global Environmental Politics, 15(3), 74–94. https://doi.org/10.1162/GLEP_a_00312

Hoffmann, M. J. (2011). Climate governance at the crossroads: Experimenting with a global response after Kyoto. Oxford University Press.

Hsueh, R. (2011). China's regulatory state: A new strategy for globalization. Cornell University Press.

Huang, T., & Yue, Q. (2020). How the game changer was generated? An analysis on the legal rules and development of China's green bond market. International

Environmental Agreements: Politics, Law and Economics, 20(1), 85–102. https://doi.org/10.1007/s10784-019-09460-9

Huang, Y. (2008). Capitalism with Chinese characteristics: Entrepreneurship and the state. Cambridge University Press.

Hughes, L., & Urpelainen, J. (2015). Interests, institutions, and climate policy: Explaining the choice of policy instruments for the energy sector. Environmental Science & Policy, 54, 52–63.

Hung, C.-H. D., Jiang, Y., Liu, F. H., Tu, H., & Wang, S. (2017). Bank political connections and performance in China. Journal of Financial Stability, 32, 57–69. https://doi.org/10.1016/j.jfs.2017.09.003

IFC. (2019). Emerging Market Green Bonds Report 2018.

IIGF. (2020). 2019 nian jing nei fei tie biao lv se zhai quan fa hang qing kuang fen xi [Analysis of the issuance of Domestic non-labeled green bonds in 2019]. Sina Finance. https://finance.sina.com.cn/esg/investment/2020-09-01/doc-iivhuipp1910228.shtml

International Finance. (2018, November 12). Ma Jun: Lv se jin rong yi jian cheng jin rong fa zhan de zhu liu qu shi [Ma Jun: Green finance has gradually become the mainstream trend of financial development]. Guo Ji Rong Zi Za Zhi [International Finance]. http://greenfinance.xinhua08.com/a/20181112/1784957.shtml?f=arelated

Jena, L. P., & Purkayastha, D. (2020). Accelerating Green Finance in India: Definitions and Beyond. CPI.

Jennings, P. D., & Zandbergen, P. A. (1995). Ecologically sustainable organizations: An institutional approach. Academy of Management Review, 20(4), 1015–1052.

Jensen, J. C., & Berg, N. (2012). Determinants of Traditional Sustainability Reporting Versus Integrated Reporting. An Institutionalist Approach. Business Strategy and the Environment, 21(5), 299–316. https://doi.org/10.1002/bse.740

Jiang, Y. (2019, May 23). zhong guo lv se jin rong fa zhan yan jiu bao gao 2019 fa bu qu nian wo guo lv se jin rong gong xu que kou da 8000 yi yuan [The "China Green Finance Development Research Report 2019" was released. Last year, China's green Finance Supply and demand gap reached 800 billion yuan]. Sina Finance. https://finance.sina.com.cn/roll/2019-05-23/doc-ihvhiqay0770854.shtml

Jiangsu Financial Leasing. (2019). jiang su jin rong zu lin gu fen you xian gong si 2019 nian di yi qi lv se jin rong zhai quan mu ji shuo ming shu [Jiangsu Financial Leasing Co., Ltd. Prospectus for Green financial bonds in the first term of 2019].

Jin, D., & Mengqi, N. (2011). The paradox of green credit in China. Energy Procedia, 5, 1979–1986.

Jing, L. (2011, July 8). Wo guo lv se jin rong shang chu yu zi fa chu ji jie duan [China's green finance is still in its infancy]. Economic Information Daily. http://jjckb.xinhuanet.com/2011-07/18/content_322029.htm

Jonas Meckling, & Hughes, L. (2018). Global interdependence in clean energy transitions. Business and Politics, 20(4), 467–491. https://doi.org/10.1017/bap.2018.25

Kahler, M. (2013). Rising powers and global governance: Negotiating change in a resilient status quo. International Affairs, 89(3), 711–729.

Kaminker, C., Majowski, C., & Sullivan, R. (2018). Green Bonds – Ecosystem, Issuance Process and Case Studies. https://webapp.sebgroup.com/mb/mblib.nsf/a-w/3c57af239091dddfc125822400522b99/$file/giz_seb_greenbondpublication_web.pdf

Kaplinsky, R., Terheggen, A., & Tijaja, J. (2011). China as a final market: The Gabon timber and Thai cassava value chains. World Development, 39(7), 1177–1190.

Karim, K. E., Lacina, M. J., & Rutledge, R. W. (2006). The Association between Firm Characteristics and the Level of Environmental Disclosure in Financial Statement Footnotes. In M. Freedman & B. Jaggi (Eds.), Environmental Accounting (Vol. 3, pp. 77–109). Emerald Group Publishing Limited. https://doi.org/10.1016/S1479-3598(06)03003-2

Karpf, A., & Mandel, A. (2017). Does it pay to be green? Available at SSRN 2923484.

Kassinis, G., & Vafeas, N. (2002). Corporate boards and outside stakeholders as determinants of environmental litigation. Strategic Management Journal, 23(5), 399–415. https://doi.org/10.1002/smj.230

Kastner, S. L., & Pearson, M. M. (2021). Exploring the Parameters of China's Economic Influence. Studies in Comparative International Development, 56(1), 18–44. https://doi.org/10.1007/s12116-021-09318-9

Kastner, S. L., Pearson, M. M., & Rector, C. (2016). Invest, Hold Up, or Accept? China in Multilateral Governance. Security Studies, 25(1), 142–179. https://doi.org/10.1080/09636412.2016.1134193

Kawabata, T. (2020). Private governance schemes for green bond standard: Influence on public authorities' policy making. Green Finance, 2(1), 35–54.

Kennedy, S. (2008). China's Emerging Credit Rating Industry: The Official Foundations of Private Authority. The China Quarterly, 193.

Khalid, F., Sun, J., Huang, G., & Su, C.-Y. (2021). Environmental, Social and Governance Performance of Chinese Multinationals: A Comparison of State- and Non-State-Owned Enterprises. Sustainability, 13(7), 4020. https://doi.org/10.3390/su13074020

Kidney, S. (2017). Myth buster: Why China's green bond market is more orderly than you might think. An Overview from Climate Bonds Initiative. CBI. https://www.climatebonds.net/2017/06/myth-buster-why-china%E2%80%99s-green-bond-market-more-orderly-you-might-think-overview-climate

Kitzmueller, M., & Shimshack, J. (2012). Economic perspectives on corporate social responsibility. Journal of Economic Literature, 50(1), 51–84.

Knaack, P. (2017). An Unlikely Champion of Global Finance: Why Is China Exceeding International Banking Standards? Journal of Current Chinese Affairs, 46(2), 41–79.

Knaack, P., & Gruin, J. (2020). From shadow banking to digital financial inclusion: China's rise and the politics of epistemic contestation within the financial stability board. Review of International Political Economy, 1–25.

Kollman, K., & Prakash, A. (2001). Green by Choice?: Cross-National Variations in Firms' Responses to EMS-Based Environmental Regimes. World Politics, 53(3), 399–430. https://doi.org/10.1353/wp.2001.0010

Kotabe, M., Jiang, C. X., & Murray, J. Y. (2017). Examining the complementary effect of political networking capability with absorptive capacity on the innovative performance of emerging-market firms. Journal of Management, 43(4), 1131–1156.

KPMG. (2016). Independent Assurance Statement. KPMG. https://www.icmagroup.org/Emails/icma-vcards/YES%20BANK-%20External%20Review%20report_101116.pdf

Križić, I. (2021). Regulating public procurement in Brazil, India, and China: Toward the regulatory-developmental state. Regulation & Governance, 15(3), 561–580. https://doi.org/10.1111/rego.12243

Kudrna, Z. (2007). Banking Reform in China: Driven by International Standards and Chinese Specifics (SSRN Scholarly Paper ID 1026854). Social Science Research Network. https://papers.ssrn.com/abstract=1026854

Larcker, D. F., & Watts, E. M. (2020). Where's the greenium? Journal of Accounting and Economics, 69(2–3), 101312.

Levitsky, Steven., & Way, L. (2010). Competitive authoritarianism: Hybrid regimes after the Cold War. Cambridge University Press.

Levy, D. L., & Rothenberg, S. (2002). Heterogeneity and change in environmental strategy: Technological and political responses to climate change in the global automobile industry. Organizations, Policy and the Natural Environment: Institutional and Strategic Perspectives, 173–193.

Li, D., Heimeriks, G., & Alkemade, F. (2020). The emergence of renewable energy technologies at country level: Relatedness, international knowledge spillovers and domestic energy markets. Industry and Innovation, 27(9), 991–1013. https://doi.org/10.1080/13662716.2020.1713734

Li, H., Meng, L., & Zhang, J. (2006). Why do entrepreneurs enter politics? Evidence from China. Economic Inquiry, 44(3), 559–578.

Li, H., & Zhang, Y. (2007). The role of managers' political networking and functional experience in new venture performance: Evidence from China's transition economy. Strategic Management Journal, 28(8), 791–804.

Li, L., Xia, X. H., Chen, B., & Sun, L. (2018). Public participation in achieving sustainable development goals in China: Evidence from the practice of air pollution control. Journal of Cleaner Production, 201, 499–506. https://doi.org/10.1016/j.jclepro.2018.08.046

Li, Q., Luo, W., Wang, Y., & Wu, L. (2013). Firm performance, corporate ownership, and corporate social responsibility disclosure in China. Business Ethics: A European Review, 22(2), 159–173. https://doi.org/10.1111/beer.12013

Li, W., & Zhang, R. (2010). Corporate Social Responsibility, Ownership Structure, and Political Interference: Evidence from China. Journal of Business Ethics, 96(4), 631–645. https://doi.org/10.1007/s10551-010-0488-z

Li, X., & Chan, C. G.-W. (2016). Who Pollutes? Ownership type and environmental performance of Chinese firms. Journal of Contemporary China, 25(98), 248–263. https://doi.org/10.1080/10670564.2015.1075718

Li, Z., Wang, P., & Wu, T. (2021). Do foreign institutional investors drive corporate social responsibility? Evidence from listed firms in China. Journal of Business Finance & Accounting, 48(1–2), 338–373. https://doi.org/10.1111/jbfa.12481

Liang, H., Ren, B., & Sun, S. L. (2015). An anatomy of state control in the globalization of state-owned enterprises. Journal of International Business Studies, 46(2), 223–240.

Lipscy, P. Y. (2018). The Institutional Politics of Energy and Climate Change. Book Manuscript. Stanford University, Stanford CA.

Liu, C. (2018). Are women greener? Corporate gender diversity and environmental violations. Journal of Corporate Finance, 52, 118–142. https://doi.org/10.1016/j.jcorpfin.2018.08.004

Liu, N., & Qiao, S. (2021, August 12). Zhong guo lv se zhai quan shi chang 2021 nian shang ban nian du fa zhan qing kuang fen xi bao gao [Analysis report on the development of China's green bond market in the first half of 2021]. Sina

Finance. https://finance.sina.com.cn/esg/investment/2021-08-12/doc-ikqcfncc2395811.shtml

Liu, W. (2014). Basel III and Bank Regulation in China. Journal of Legal Technology Risk Management, 7, 1.

Liu, X., Liu, B., Shishime, T., Yu, Q., Bi, J., & Fujitsuka, T. (2010). An empirical study on the driving mechanism of proactive corporate environmental management in China. Journal of Environmental Management, 91(8), 1707–1717. https://doi.org/10.1016/j.jenvman.2010.03.011

Liu, X., Yu, Q., Fujitsuka, T., Liu, B., Bi, J., & Shishime, T. (2010). Functional mechanisms of mandatory corporate environmental disclosure: An empirical study in China. Journal of Cleaner Production, 18(8), 823–832. https://doi.org/10.1016/j.jclepro.2009.12.022

Lu, Y., & Abeysekera, I. (2014). Stakeholders' power, corporate characteristics, and social and environmental disclosure: Evidence from China. Journal of Cleaner Production, 64, 426–436. https://doi.org/10.1016/j.jclepro.2013.10.005

Luethge, D., & Guohong Han, H. (2012). Assessing corporate social and financial performance in China. Social Responsibility Journal, 8(3), 389–403. https://doi.org/10.1108/17471111211247965

Luo, L., Lan, Y.-C., & Tang, Q. (2012). Corporate Incentives to Disclose Carbon Information: Evidence from the CDP Global 500 Report. Journal of International Financial Management and Accounting, 23(2), 93–120. Scopus. https://doi.org/10.1111/j.1467-646X.2012.01055.x

Luo, X. R., Wang, D., & Zhang, J. (2017). Whose Call to Answer: Institutional Complexity and Firms' CSR Reporting. Academy of Management Journal, 60(1), 321–344. https://doi.org/10.5465/amj.2014.0847

MacAskill, S., Roca, E., Liu, B., Stewart, R. A., & Sahin, O. (2021). Is there a green premium in the green bond market? Systematic literature review revealing premium determinants. Journal of Cleaner Production, 280, 124491. https://doi.org/10.1016/j.jclepro.2020.124491

Madden, N. J. (2014). Green means stop: Veto players and their impact on climate-change policy outputs. Environmental Politics, 23(4), 570–589. https://doi.org/10.1080/09644016.2014.884301

Maltais, A., & Nykvist, B. (2020). Understanding the role of green bonds in advancing sustainability. Journal of Sustainable Finance & Investment, 0(0), 1–20. https://doi.org/10.1080/20430795.2020.1724864

Marquis, C., & Qian, C. (2013). Corporate Social Responsibility Reporting in China: Symbol or Substance? Organization Science, 25(1), 127–148. https://doi.org/10.1287/orsc.2013.0837

Marquis, C., & Raynard, M. (2015). Institutional Strategies in Emerging Markets. Academy of Management Annals, 9(1), 291–335. https://doi.org/10.5465/19416520.2015.1014661

Marquis, C., Toffel, M. W., & Zhou, Y. (2016). Scrutiny, Norms, and Selective Disclosure: A Global Study of Greenwashing. Organization Science, 27(2), 483–504. https://doi.org/10.1287/orsc.2015.1039

Marquis, C., Zhang, J., & Zhou, Y. (2011). Regulatory Uncertainty and Corporate Responses to Environmental Protection in China. California Management Review, 54(1), 39–63. https://doi.org/10.1525/cmr.2011.54.1.39

Marx, A., Maertens, M., & Swinnen, J. F. (2012). Private standards and global governance: Economic, legal and political perspectives. Edward Elgar Publishing.

McGuinness, P. B., Vieito, J. P., & Wang, M. (2017). The role of board gender and foreign ownership in the CSR performance of Chinese listed firms. Journal of Corporate Finance, 42, 75–99. https://doi.org/10.1016/j.jcorpfin.2016.11.001

McNally, C. A. (2012). Sino-capitalism: China's reemergence and the international political economy. World Politics, 64(4), 741–776.

McNally, C. A. (2013). The Challenge of Refurbished State Capitalism: Implications for the Global Political Economic Order. Der Moderne Staat - Dms: Zeitschrift Für Public Policy, Recht Und Management, 6(1), 33–48.

McNally, C. A. (2020). Chaotic mélange: Neo-liberalism and neo-statism in the age of Sino-capitalism. Review of International Political Economy, 27(2), 281–301.

Meckling, J. (2014). Carbon Coalitions Business, Climate Politics, and the Rise of Emissions Trading. MIT Press.

Meckling, J., & Nahm, J. (2018). The power of process: State capacity and climate policy. Governance, 31(4), 741–757. https://doi.org/10.1111/gove.12338

Meng, A. X., Lau, I., & Boulle, B. (2018). China Green Bond Market 2017. CBI. https://www.climatebonds.net/resources/reports/china-green-bond-market-2017

Meng, A., Xie, W., Shao, H., Lau, I., & Almeida, M. (2020). China Green Bond Market: 2019 Research Report.

Meyer, J. W., & Rowan, B. (1977). Institutionalized Organizations: Formal Structure as Myth and Ceremony. American Journal of Sociology, 83(2), 340–363. https://doi.org/10.1086/226550

Mildenberger, M. (2020). Carbon captured. How business and labor control climate politics. The MIT Press.

Ministry Of Environment. (2015). India's Intended Nationally Determined Contribution: Working towards climate justice. India Environment Portal. http://www.indiaenvironmentportal.org.in/content/419700/indias-intended-nationally-determined-contribution-working-towards-climate-justice/

Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts. The Academy of Management Review, 22(4), 853–886. https://doi.org/10.2307/259247

Monk, A., & Perkins, R. (2020). What explains the emergence and diffusion of green bonds? Energy Policy, 145, 111641. https://doi.org/10.1016/j.enpol.2020.111641

Musacchio, A., & Lazzarini, S. G. (2014). Reinventing State Capitalism. Harvard University Press.

Musacchio, A., Lazzarini, S. G., & Aguilera, R. V. (2015). New Varieties of State Capitalism: Strategic and Governance Implications. Academy of Management Perspectives, 29(1), 115–131. https://doi.org/10.5465/amp.2013.0094

Nanayakkara, M., & Colombage, S. (2019). Do investors in Green Bond market pay a premium? Global evidence. Applied Economics, 51(40), 4425–4437.

Naughton, B., & Tsai, K. S. (2015). State capitalism, institutional adaptation, and the Chinese miracle. Cambridge University Press.

Neu, D., Warsame, H., & Pedwell, K. (1998). Managing public impressions: Environmental disclosures in annual reports. Accounting, Organizations and Society, 23(3), 265–282.

Neumayer, E., & Perkins, R. (2004). What Explains the Uneven Take-Up of ISO 14001 at the Global Level? A Panel-Data Analysis. Environment and Planning A: Economy and Space, 36(5), 823–839. https://doi.org/10.1068/a36144

Nölke, A. (2014). Multinational Corporations from Emerging Markets: State Capitalism 3.0. Springer.

North, D. C. (1990). Institutions, institutional change, and economic performance. Cambridge University Press.

Oatley, T., Winecoff, W. K., Pennock, A., & Danzman, S. B. (2013). The political economy of global finance: A network model. Perspectives on Politics, 11(01), 133–153.

OECD. (2017). Mobilising Bond Markets for a Low-Carbon Transition. OECD Publishing. https://doi.org/10.1787/9789264272323-en

Oliver, C. (1997). Sustainable competitive advantage: Combining institutional and resource-based views. Strategic Management Journal, 18(9), 697–713.

Overdevest, C. (2010). Comparing forest certification schemes: The case of ratcheting standards in the forest sector. Socio-Economic Review, 8(1), 47–76. https://doi.org/10.1093/ser/mwp028

Overdevest, C., & Zeitlin, J. (2014). Assembling an experimentalist regime: Transnational governance interactions in the forest sector. Regulation & Governance, 8(1), 22–48. https://doi.org/10.1111/j.1748-5991.2012.01133.x

Park, S. K. (2018a). Investors as regulators: Green bonds and the governance challenges of the sustainable finance revolution. Stan. J. Int'l L., 54, 1.

Park, S. K. (2018b). Investors as Regulators: Green Bonds and the Governance Challenges of the Sustainable Finance Revolution. Stanford Journal of International Law, 54(1), 1–47.

Partridge, C., & Medda, F. R. (2020). The evolution of pricing performance of green municipal bonds. Journal of Sustainable Finance & Investment, 10(1), 44–64.

Patten, D. M. (2002a). The relation between environmental performance and environmental disclosure: A research note. Accounting, Organizations and Society, 27(8), 763–773.

Patten, D. M. (2002b). Media exposure, public policy pressure, and environmental disclosure: An examination of the impact of tri data availability. Accounting Forum, 26(2), 152–171. https://doi.org/10.1111/1467-6303.t01-1-00007

Paull, J. (2008). China's organic revolution. In Marketing of organic products: Global experiences (pp. 260–275). The Icfai University Press, Hyderabad, India.

PBoC. (2021, July 31). Ren min yin hang: Zheng ti xie tong jia kuai wan shan lv se jin rong ti xi [People's Bank of China: Overall Coordination, Accelerate the improvement of the Green Financial System]. CFC. https://mp.weixin.qq.com/s/0j6PKS26-nc4_vnPD94GLA

PBOC et al. (2016). Guan yu gou jian lv se jin rong ti xi de zhi dao yi jian [Guidelines for Establishing the Green Financial System]. http://www.scio.gov.cn/32344/32345/35889/36819/xgzc36825/Document/1555348/1555348.htm

Pearson, M. M. (2005). The Business of Governing Business in China: Institutions and Norms of the Emerging Regulatory State. World Politics, 57(2), 296–322.

Pearson, M. M. (2007). Governing the Chinese Economy: Regulatory Reform in the Service of the State. Public Administration Review, 67(4), 718–730. https://doi.org/10.1111/j.1540-6210.2007.00755.x

Pearson, M. M. (2011). Variety Within and Without: The Political Economy of Chinese Regulation. In S. Kennedy (Ed.), Beyond the Middle Kingdom. Comparative Perspectives on China's Capitalist Transformation (pp. 15–43). Stanford University Press.

Pearson, M. M. (2019). China and global climate change governance. In Handbook on the International Political Economy of China. Edward Elgar Publishing.

Pearson, M.M., Rithmire, M., & Tsai, K. S. (2021). Party-state capitalism in China. Current History, 120(827), 207–213.

Peng, M. W., & Heath, P. S. (1996). The Growth of the Firm in Planned Economies in Transition: Institutions, Organizations, and Strategic Choice. The Academy of Management Review, 21(2), 492–528. https://doi.org/10.2307/258670

Peng, M. W., & Luo, Y. (2000). Managerial Ties and Firm Performance in a Transition Economy: The Nature of a Micro-Macro Link. Academy of Management Journal, 43(3), 486–501. https://doi.org/10.5465/1556406

Perkins, R., & Neumayer, E. (2010). Geographic Variations in the Early Diffusion of Corporate Voluntary Standards: Comparing ISO 14001 and the Global Compact. Environment and Planning A, 42(2), 347–365. https://doi.org/10.1068/a4249

Petry, J. (2020a). Financialization with Chinese characteristics? Exchanges, control and capital markets in authoritarian capitalism. Economy and Society, 49(2), 213–238. https://doi.org/10.1080/03085147.2020.1718913

Petry, J. (2020b). Same same, but different: Varieties of capital markets, Chinese state capitalism and the global financial order. Competition & Change, 1024529420964723. https://doi.org/10.1177/1024529420964723

Potoski, M., & Prakash, A. (2004). Regulatory Convergence in Nongovernmental Regimes? Cross-National Adoption of ISO 14001 Certifications. The Journal of Politics, 66(3), 885–905. https://doi.org/10.1111/j.1468-2508.2004.00281.x

Potoski, M., & Prakash, A. (2009). Voluntary programs: A club theory perspective. MIT Press.

Potoski, M., & Prakash, A. (2013). Green Clubs: Collective Action and Voluntary Environmental Programs. Annual Review of Political Science, 16(1), 399–419. https://doi.org/10.1146/annurev-polisci-032211-211224

Prakash, A., & Potoski, M. (2006). The voluntary environmentalists: Green clubs, ISO 14001, and voluntary environmental regulations. Cambridge University Press.

Prakash, A., & Potoski, M. (2014). Global Private Regimes, Domestic Public Law: ISO 14001 and Pollution Reduction. Comparative Political Studies, 47(3), 369–394. https://doi.org/10.1177/0010414013509573

Prell, C. (2012). Social network analysis: History, theory and methodology. Sage.

Qi, G. Y., Zeng, S. X., Tam, C. M., Yin, H. T., Wu, J. F., & Dai, Z. H. (2011). Diffusion of ISO 14001 environmental management systems in China: Rethinking on stakeholders' roles. Journal of Cleaner Production, 19(11), 1250–1256. https://doi.org/10.1016/j.jclepro.2011.03.006

Qi, Y., Ma, L., Zhang, H., & Li, H. (2008). Translating a Global Issue Into Local Priority: China's Local Government Response to Climate Change. The Journal of Environment & Development, 17(4), 379–400. https://doi.org/10.1177/1070496508326123

Qin, Y., Harrison, J., & Chen, L. (2019). A framework for the practice of corporate environmental responsibility in China. Journal of Cleaner Production, 235, 426–452. https://doi.org/10.1016/j.jclepro.2019.06.245

Raustiala, K., & Slaughter, A.-M. (2002). International law, international relations and compliance. In W. Carlsnaes, B. A. Simmons, & T. Risse (Eds.), The Handbook of International Relations (pp. 538–558). Sage.

Reinsberg, B., & Westerwinter, O. (2021). The global governance of international development: Documenting the rise of multi-stakeholder partnerships and identifying underlying theoretical explanations. The Review of International Organizations, 16(1), 59–94. https://doi.org/10.1007/s11558-019-09362-0

Risse, T. (1995). Bringing transnational relations back in: Non-state actors, domestic structures, and international institutions. Cambridge University Press. http://catdir.loc.gov/catdir/toc/cam022/95000866.html

Roberts, C., Geels, F. W., Lockwood, M., Newell, P., Schmitz, H., Turnheim, B., & Jordan, A. (2018). The politics of accelerating low-carbon transitions: Towards a new research agenda. Energy Research & Social Science, 44, 304–311. https://doi.org/10.1016/j.erss.2018.06.001

Roberts, R. W. (1992). Determinants of corporate social responsibility disclosure: An application of stakeholder theory. Accounting, Organizations and Society, 17(6), 595–612.

Roger, C., & Dauvergne, P. (2016). The rise of transnational governance as a field of study. International Studies Review, 18(3), 415–437.

Roger, C., Hale, T., & Andonova, L. (2015). How do domestic politics shape participation in transnational climate governance. BSG Working paper, BSG-WP-2015-001. University of Oxford. Retrieved: https://www. bsg. ox. ac. uk/sites/www. bsg. ox. ac. uk/files/documents/BSG-WP-2015-001. pdf.

Roger, C., Hale, T., & Andonova, L. (2017). The Comparative Politics of Transnational Climate Governance. International Interactions, 43(1), 1–25. https://doi.org/10.1080/03050629.2017.1252248

Rose, P. (2019). Certifying the 'Climate' in climate bonds. Capital Markets Law Journal, 14(1), 59–77. https://doi.org/10.1093/cmlj/kmy032

Rühlig, T. (2021). Technical Standards: A New Realm of China's International Influence? (EURICS Brief 12). EURICS.

Russo, A., Mariani, M., & Caragnano, A. (2021). Exploring the determinants of green bond issuance: Going beyond the long-lasting debate on performance consequences. Business Strategy and the Environment, 30(1), 38–59. https://doi.org/10.1002/bse.2608

SAC. (2020). Zhong guo zheng quan ye xie hui fa bu 2019 nian zheng quan gong si zhai quan cheng xiao ye wu zhuan xiang tong ji [China Securities Industry Association releases Special statistics on bond Underwriting Business of securities Companies in 2019]. https://www.sac.net.cn/hysj/zqgsyjpm/202002/t20200220_141748.html

Sanders, R. (2006). Organic agriculture in China: Do property rights matter? Journal of Contemporary China, 15(46), 113–132.

Saravade, V. (2018). A Comparative Analysis of the Institutional Impact on the Green Bond Markets in India and China [Master's Thesis]. University of Waterloo.

Saravade, V., & Weber, O. (2020). An Institutional Pressure and Adaptive Capacity Framework for Green Bonds: Insights from India's Emerging Green Bond Market. World, 1(3), 239–263. https://doi.org/10.3390/world1030018

SASAC. (2018). guo zi bao gao shi nian ren ran, yang qi zai she hui ze ren lv xing fang mian cheng ji ru he? [State-owned assets REPORT ｜ TEN years have passed, what is the performance of central enterprises in fulfilling their social responsibilities?]. SASAC. http://www.sasac.gov.cn/n2588025/n2588164/n4437287/c8788875/content.html

Schleifer, P. (2016). Private Governance Undermined: India and the Roundtable on Sustainable Palm Oil. Global Environmental Politics, 16(1), 38–58. https://doi.org/10.1162/GLEP_a_00335

Schleifer, P. (2017). Private regulation and global economic change: The drivers of sustainable agriculture in Brazil. Governance, 30(4), 687–703. https://doi.org/10.1111/gove.12267

Schleifer, P., & Sun, Y. (2018). Emerging markets and private governance: The political economy of sustainable palm oil in China and India. Review of International Political Economy, 25(2), 190–214. https://doi.org/10.1080/09692290.2017.1418759

Scott, S., Si, Z., Schumilas, T., & Chen, A. (2014). Contradictions in state- and civil society-driven developments in China's ecological agriculture sector. Food Policy, 45, 158–166. https://doi.org/10.1016/j.foodpol.2013.08.002

Scott, W. R. (2001). Institutions and organizations. Sage.

Seifert, B., Morris, S. A., & Bartkus, B. R. (2004). Having, giving, and getting: Slack resources, corporate philanthropy, and firm financial performance. Business & Society, 43(2), 135–161.

Shanghai Qingyue. (2020). gui ze bu jin wan shan, pi lu you dai ti gao lv se gong si zhai quan huan jing xin xi pi lu tui dong zong jie [The rules are not perfect, and disclosure needs to be improved—Summary of the promotion of Environmental Information disclosure for Green Corporate Bonds]. ESG 行动者. https://mp.weixin.qq.com/s?__biz=MzI4MTA2Njk2MA==&mid=2247485410&idx=1&sn=57e496aec929ee36f5c4686309266be6&chksm=ebafab5ddcd8224bb3f9e83191c13e80b193d92fed62edc7daecd1a591b0ae816cb68082046e&token=2100789452&lang=zh_CN&exportkey=AuoBmxYSueNA4FsadZ7vFBA%3D&pass_ticket=L3xN9Q9DwPtbCqLJjhra6nGRYPpsMrD1ZoXDG30aoN2ggSCqCn%2FEQFOontQPP9EB&wx_header=0#rd

Shao, H., Boulle, B., Wu, Y., Long, Y., & Zhang, R. (2020). China's Green Bond Issuance and Investment Opportunity.

Sharma, P., Cheng, L. T. W., & Leung, T. Y. (2020). Impact of political connections on Chinese export firms' performance – Lessons for other emerging markets. Journal of Business Research, 106, 24–34. https://doi.org/10.1016/j.jbusres.2019.08.037

Sharma, S. (2000). Managerial Interpretations and Organizational Context as Predictors of Corporate Choice of Environmental Strategy. Academy of Management Journal, 43(4), 681–697. https://doi.org/10.5465/1556361

Shih, V. (2011). “Goldilocks” Liberalization: The Uneven Path Toward Interest Rate Reform in China. Journal of East Asian Studies, 11(3), 437–465.

Shih, V. (2019). China’s credit conundrum. New Left Review, 115, 59–74.

Siegel, J. (2007). Contingent Political Capital and International Alliances: Evidence from South Korea. Administrative Science Quarterly, 52(4), 621–666. https://doi.org/10.2189/asqu.52.4.621

Solingen, E. (Ed.). (2021). Geopolitics, Supply Chains, and International Relations in East Asia. Cambridge University Press.

Stadelmann, M., & Castro, P. (2014). Climate policy innovation in the South – Domestic and international determinants of renewable energy policies in developing and emerging countries. Global Environmental Change, 29, 413–423. https://doi.org/10.1016/j.gloenvcha.2014.04.011

State Council & CPC Central Committee. (2015). Sheng tai wen ming ti zhi gai ge zong ti fang an [Overall Plan for the Structural Reform for Ecological Civilization]. http://www.gov.cn/guowuyuan/2015-09/21/content_2936327.htm

State Council General Office. (2014). Guo wu yuan ban gong ting guan yu tui xing huan jing wu ran di san fang zhi li de yi jian [The General Office of the State Council’s opinions on the implementation of third-party governance of environmental pollution]. http://www.gov.cn/zhengce/content/2015-01/14/content_9392.htm

Steffen, B., Matsuo, T., Steinemann, D., & Schmidt, T. S. (2018). Opening new markets for clean energy: The role of project developers in the global

diffusion of renewable energy technologies. Business and Politics, 20(4), 553–587. https://doi.org/10.1017/bap.2018.17

Sun, G. (2016). Financial Reforms in Modern China: A Frontbencher's Perspective. Springer.

Sun, G. (2020). Banking institutions and banking regulations. In G. Sun, M. Amstad, & W. Xiong (Eds.), The Handbook of China's Financial System (pp. 9–37). Princeton University Press. https://doi.org/10.2307/j.ctv11vcdpc.5

Sustainable Banking Network. (2019). Global Progress Report of the Sustainable Banking Network: Innovations in Policy and Industry Actions in Emerging Markets.

Sustainalytics. (2022, August 26). Jin rong ji gou jing wai lv zhai fa xing zhi nan [Guide to Overseas Green Bond Issuance by Financial Institutions]. Morningstar. https://mp.weixin.qq.com/s/6kih5lkFe2tlLQnnq3hYtg

SynTao Green Finance. (2020). Zhong guo di fang zheng fu lv se jin rong zheng ce you xiao xing fen xi ji yu 20162019 nian lv se zhai quan fa xing shu ju [Analysis of the Effectiveness of China's Local government's Green Finance Policy-Based on Green Bond Issuance Data from 2016 to 2019]. http://www.syntaogf.com/Menu_Page_CN.asp?ID=8&Page_ID=360

Tihanyi, L., Aguilera, R. V., Heugens, P., van Essen, M., Sauerwald, S., Duran, P., & Turturea, R. (2019). State Ownership and Political Connections. Journal of Management, 45(6), 2293–2321. https://doi.org/10.1177/0149206318822113

Tolliver, C., Keeley, A. R., & Managi, S. (2020). Drivers of green bond market growth: The importance of Nationally Determined Contributions to the Paris

Agreement and implications for sustainability. Journal of Cleaner Production, 244, 118643. https://doi.org/10.1016/j.jclepro.2019.118643

Töpfer, L.-M. (2017). Institutional change in Chinese cross-border finance: Foreign investors, the party-state and power resources. Review of International Political Economy, 24(1), 144–175. https://doi.org/10.1080/09692290.2016.1273842

Tripathy, A., Mok, L., & House, K. (2020). Defining Climate-Aligned Investment: An Analysis of Sustainable Finance Taxonomy Development (SSRN Scholarly Paper ID 3684926). Social Science Research Network. https://papers.ssrn.com/abstract=3684926

Tu, C. A., Rasoulinezhad, E., & Sarker, T. (2020). Investigating solutions for the development of a green bond market: Evidence from analytic hierarchy process. Finance Research Letters, 34, 101457. https://doi.org/10.1016/j.frl.2020.101457

Turcotte, M.-F., Reinecke, J., & Hond, F. den. (2014). Explaining variation in the multiplicity of private social and environmental regulation: A multi-case integration across the coffee, forestry and textile sectors. Business and Politics, 16(1), 151–189. https://doi.org/10.1515/bap-2012-0016

UN Environment Inquiry. (2017). Green Finance: G20 Progress Update 2017.

UNFCCC. (2018). Yearbook of Global Climate Action 2018. United Nations Climate Change Secretariat.

Veeck, A., Yu, H., & Burns, A. C. (2010). Consumer risks and new food systems in urban China. Journal of Macromarketing, 30(3), 222–237.

Vogel, D. (2005). The market for virtue: The potential and limits of corporate social responsibility. Brookings Institution Press.

Vogel, S. K. (2018). Marketcraft: How Governments Make Markets Work. Oxford University Press.

Walls, J. L., Berrone, P., & Phan, P. H. (2012). Corporate governance and environmental performance: Is there really a link? Strategic Management Journal, 33(8), 885–913.

Walter, A. (2008). Governing finance: East Asia's adoption of international standards. Cornell University Press.

Wang, F., Yang, S., Reisner, A., & Liu, N. (2019). Does Green Credit Policy Work in China? The Correlation between Green Credit and Corporate Environmental Information Disclosure Quality. Sustainability, 11(3), 733. https://doi.org/10.3390/su11030733

Wang, R., Wijen, F., & Heugens, P. P. M. A. R. (2018). Government's green grip: Multifaceted state influence on corporate environmental actions in China. Strategic Management Journal, 39(2), 403–428. https://doi.org/10.1002/smj.2714

Wang, Y. (2015). The rise of the 'shareholding state': Financialization of economic management in China. Socio-Economic Review, 13(3), 603–625. https://doi.org/10.1093/ser/mwv016

Wang, Z., Reimsbach, D., & Braam, G. (2018). Political embeddedness and the diffusion of corporate social responsibility practices in China: A trade-off

between financial and CSR performance? Journal of Cleaner Production, 198, 1185–1197. https://doi.org/10.1016/j.jclepro.2018.07.116

Williamson, O. E. (2000). The New Institutional Economics: Taking Stock, Looking Ahead. Journal of Economic Literature, 38, 595–613.

Wright, L., Gloudeman, L., & Rosen, D. H. (2020). China Economic Risk Matrix. Center for Strategic & International Studies.

Wright, M., Wood, G., Musacchio, A., Okhmatovskiy, I., Grosman, A., & Doh, J. P. (2021). State capitalism in international context: Varieties and variations. Journal of World Business, 56(2), 101160. https://doi.org/10.1016/j.jwb.2020.101160

Wu, F. (2016). Shaping China's Climate Diplomacy: Wealth, Status, and Asymmetric Interdependence. Journal of Chinese Political Science, 21(2), 199–215. https://doi.org/10.1007/s11366-016-9404-4

Wu, W., Wu, C., & Liu, X. (2008). Political Connection and Market Valuation: Evidence from China Individual-controlled Listed Firms [J]. Economic Research Journal, 7, 130–141.

Wuhan Metro. (2016). wu han di tie ji tuan you xian gong si 2016 nian du di er qi zhong qi piao ju mu ji shuo ming shu [Wuhan Metro Group Co., Ltd. Prospectus for green medium-term notes in the second term of 2016].

Wuhan Metro. (2017). wu han di tie ji tuan you xian gong si 2017 nian du di yi qi lv se zhong qi piao ju mu ji shuo ming shu [Wuhan Metro Group Co., Ltd. Prospectus for green medium-term notes in first term of 2017].

Wuhan Metro. (2018a). 2018 nian di yi qi wu han di tie ji tuan you xian gong si lv se zhai quan mu ji shuo ming shu [Prospectus for Wuhan Metro Group Co., Ltd. Green Bond in the first term of 2018].

Wuhan Metro. (2018b). wu han di tie ji tuan you xian gong si 2018 nian du di yi qi lv se zhong qi piao ju mu ji shuo ming shu [Wuhan Metro Group Co., Ltd. Prospectus for green medium-term notes in first term of 2018].

Xie, yumeng. (2018). Bei jing qi che gong si lv se zhai quan rong zi an li yan jiu [The Study of Beijing Automotive Co., Ltd Green Bond Financing Case]. Xinjiang University of Finance and Economics.

Xie, B., Tingyou, L., & Yi, Q. (2011). Organic certification and the market: Organic exports from and imports to China. British Food Journal, 113(10), 1200–1216. https://doi.org/10.1108/00070701111177647

Yao, Z., & Wu, Y. (2021, April 12). Carbon neutrality in China: Behind the corporate hype. China Dialogue. https://chinadialogue.net/en/climate/carbon-neutrality-in-china-behind-the-corporate-hype/

Yasuda, J. K. (2017). On Feeding the Masses. Cambridge University Press.

Yin, J. (2017). Institutional Drivers for Corporate Social Responsibility in an Emerging Economy: A Mixed-Method Study of Chinese Business Executives. Business & Society, 56(5), 672–704. https://doi.org/10.1177/0007650315592856

Yin, W., Zhu, Z., Kirkulak-Uludag, B., & Zhu, Y. (2020). The determinants of green credit and its impact on the performance of Chinese banks. Journal of Cleaner Production, 124991. https://doi.org/10.1016/j.jclepro.2020.124991

Zeng, S. X., Tam, C. M., Tam, V. W. Y., & Deng, Z. M. (2005). Towards implementation of ISO 14001 environmental management systems in selected industries in China. Journal of Cleaner Production, 13(7), 645–656. https://doi.org/10.1016/j.jclepro.2003.12.009

Zeng, S. X., Xu, X. D., Dong, Z. Y., & Tam, V. W. Y. (2010). Towards corporate environmental information disclosure: An empirical study in China. Journal of Cleaner Production, 18(12), 1142–1148. https://doi.org/10.1016/j.jclepro.2010.04.005

Zeng, S. X., Xu, X. D., Yin, H. T., & Tam, C. M. (2012). Factors that Drive Chinese Listed Companies in Voluntary Disclosure of Environmental Information. Journal of Business Ethics, 109(3), 309–321. https://doi.org/10.1007/s10551-011-1129-x

Zhang, B., Yang, Y., & Bi, J. (2011). Tracking the implementation of green credit policy in China: Top-down perspective and bottom-up reform. Journal of Environmental Management, 92(4), 1321–1327. https://doi.org/10.1016/j.jenvman.2010.12.019

Zhang, C. (2021, May 11). Zhang cheng hui: Lv se jin rong fa zhan xun su dan bu jun heng [Zhang Chenghui: Green finance is developing rapidly but unevenly]. Caixin. https://opinion.caixin.com/2021-05-11/101709499.html

Zhang, G., Wang, L., Guo, F., & Yang, G. (2021). Does corporate internationalization affect corporate social responsibility? Evidence from China. Emerging Markets Review, 46, 100794. https://doi.org/10.1016/j.ememar.2021.100794

Zhang, H. (2020). Regulating green bond in China: Definition divergence and implications for policy making. Journal of Sustainable Finance & Investment, 10(2), 141–156. https://doi.org/10.1080/20430795.2019.1706310

Zhang, L.-X., Hu, Q.-H., & Wang, C.-B. (2013). Emergy evaluation of environmental sustainability of poultry farming that produces products with organic claims on the outskirts of mega-cities in China. Ecological Engineering, 54, 128–135.

Zhang, L.-Y. (2019). Green bonds in China and the Sino-British collaboration: More a partnership of learning than commerce. The British Journal of Politics and International Relations, 21(1), 207–225.

Zhang, X. S., & Li, Z. M. (2009). The efficiency of green credit's implement and the behavior of local government. On Economic Problems, 3, 87–90.

Zheng, H., & Zhang, Y. (2016). Do SOEs outperform private enterprises in CSR? Evidence from China. Chinese Management Studies, 10(3), 435–457. Scopus. https://doi.org/10.1108/CMS-10-2015-0225

Zhu J., Wang, J., Yu, Z., Yang, S., & Wen, Q. (2020). Policy Effectiveness of Green Finance:Market Reaction to the Issuance of Green Bonds in China. China Public Administration Review, 2, 21–43.

Zhu, Q., Cordeiro, J., & Sarkis, J. (2013). Institutional pressures, dynamic capabilities and environmental management systems: Investigating the ISO 9000 – Environmental management system implementation linkage. Journal of Environmental Management, 114, 232–242. https://doi.org/10.1016/j.jenvman.2012.10.006

Zhu, Q., & Geng, Y. (2001). Integrating environmental issues into supplier selection and management: A study of large and medium-sized state-owned enterprises in China. Greener Management International, 35, 27–40. Scopus.

Zhu, Q., & Sarkis, J. (2016). Green marketing and consumerism as social change in China: Analyzing the literature. International Journal of Production Economics, 181, 289–302.

Zhu, Q., Sarkis, J., & Geng, Y. (2005). Green supply chain management in China: Pressures, practices and performance. International Journal of Operations & Production Management; Bradford, 25(5/6), 449–468.

Zu, L., & Song, L. (2009). Determinants of Managerial Values on Corporate Social Responsibility: Evidence from China. Journal of Business Ethics, 88(1), 105–117. https://doi.org/10.1007/s10551-008-9828-7