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RESEARCH ARTICLE

Do Environmental Policies Affect MNEs' Foreign Subsidiary Investments? An Empirical Investigation

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Abstract

We build on institutional theory to examine the impact of countries' environmental policies on MNEs' foreign subsidiary investments. We extend prior IB research that finds both positive and negative associations between environmental policies and MNE investments by showing that the relationship between environmental policy and MNE subsidiary investments is mediated by the effectiveness with which host countries enforce these policies. Specifically, we posit that environmental policies are effective when countries align them with tangible institutional outcomes such as actual reductions in emissions or increases in renewable energy production. This reduces uncertainty by providing a reliable and efficient framework for economic transactions. We test our arguments on a sample of 882 public US firms and their subsidiaries in 102 countries from 2000 to 2015, in conjunction with the Kyoto Protocol. We find that ratifying the Kyoto Protocol is associated with reductions in countries' emission levels and increased reliance on renewables. Further, increased reliance on renewables positively mediates the relationship between the ratification of the Kyoto Protocol and MNEs foreign subsidiary investments. For host countries, this relationship is stronger when there are greater improvements in institutions' quality. For MNEs, this relation is weaker for those MNEs associated with higher pollution. We find no such relationships for greenhouse gas emissions. Our findings contribute to the growing IB literature on environmental sustainability by highlighting the importance of effective institutions and their interaction with country- and firm-level heterogeneities.

Keywords Greenhouse gas emissions · Renewable energy · Kyoto Protocol · Sustainability · Institutions

Flladina Zilja, Gilbert Kofi Adarkwah and Christopher Albert Sabel contributed equally to this study.

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1 Introduction

How do countries' environmental policies affect multinational enterprises' (MNEs) foreign subsidiary investments? Climate change and the need to reduce greenhouse gas emissions (GHGE) have become a major focus of governments (Guest, 2010) and MNEs (Bull & Miklian, 2019; Perez-Batres et al., 2012). Motivated by the need to address climate change and pollution, to create jobs, and to improve competitiveness (Bass & Grøgaard, 2021; Holburn, 2012), many countries have enacted environmental policies to encourage transition into more sustainable energy sources (Bass & Grøgaard, 2021). These policies require changes in MNEs' behavior; they may, for instance, require MNEs to measure their carbon footprint, innovate products and processes, and adopt environmentally friendlier production processes. Studies show that such institutional pressures affect MNEs' activities (Penna & Geels, 2015; Porter & Van der Linde, 1995) by increasing the cost of operations (Berman & Bui, 2001; Dowell et al., 2000; Li & Zhou, 2017). This alters the national business climate and appeal for foreign investments (Guest, 2010; Hamprecht & Schwarzkopf, 2014; Shinkle & Spencer, 2012).

However, while national environmental sustainability policies may affect the foreign investments of MNEs, empirical evidence of the impact of countries' environmental policies on MNEs' foreign investments is scarce. Few papers (e.g., Dowell et al., 2000; Li & Zhou, 2017) studied the issue empirically at the firm level, where decisions to determine firms' efforts to address climate change and pollution levels are made. On the one hand, conceptual work predicts that environmental regulations increase compliance costs for MNEs and may lead to market exit (Berchicci & King, 2007; Jaffe et al., 1995). Consistent with this argument, empirical studies show that MNEs avoid countries with stringent environmental regulations by shifting polluting operations from such countries to those with lax regulations (Dowell et al., 2000; Taylor, 2005). On the other hand, MNEs cannot avoid environmental regulation entirely, as such policies are increasingly supranational (Bass & Grøgaard, 2021; Grubb et al., 2018) and present an opportunity for being an early mover in obtaining green advantages (Gao & Bansal, 2013; Rugman & Verbeke, 1998). The purpose of this study is to shed light on the unclear association between countries' environmental policies and MNEs' foreign subsidiary investments.

Building on institutional theory (North, 1990, 1991), we argue that environmental policies increase institutional pressure to achieve two important outcomes: reduce GHGE and increase reliance on renewable energy (RRE). We follow prior work on GHGE and the Kyoto Protocol (Kumazawa & Callaghan, 2012) and hypothesize that countries that adopt stringent environmental regulations decrease GHGE and increase RRE. This, in turn, affects the attractiveness of the country as a foreign investment destination. This is so because countries with effective institutions (North, 1991)—that align formal institutions (i.e.,

environmental policies) with tangible institutional outcomes (i.e., reductions in GHGE, increases in RRE)—reduce uncertainties by providing a reliable and efficient framework for economic transactions. This attracts MNE subsidiary investment, as MNEs perceive countries with tangible and predictable institutional outcomes to be more fertile investment locations (Cuervo-Cazurra, 2008; Georgallis et al., 2020). We test our hypotheses on a sample of 882 US firms and their ties to 102 host countries from 2000 to 2015. We find that countries that signed and ratified the Kyoto Protocol experience greater increase in RRE and decreased GHGE. Further, we find that RRE positively mediates the relationship between the adoption of the Kyoto Protocol and MNEs subsidiary investments. Yet, this relationship is stronger for countries with greater institutional quality. For firms, the relationship is weaker for those that are in capital-intensive sectors. This supports our argument that countries that align institutional pressures with tangible outcomes (i.e., reduce uncertainty) are attractive to MNE, thereby receive more subsidiary investments. We do not find evidence for a mediating effect of GHGE. We later discuss why such different findings persist.

Our study makes three contributions to the international business (IB) literature. First, we add to research on institutions, particularly research on the effects of formal institutions, such as government environmental policies enacted to control or constrain firms' behavior (Hartmann & Uhlenbruck, 2015; Kolk & Pinkse, 2005, 2008). A recurring criticism of institutional theory has been its assumptions of firms' passivity to institutions (Lawrence et al., 2009; Oliver, 1991). We show that while MNEs react to institutional pressures, they often do so when institutional pressures are accompanied by tangible outcomes, which must be realized to make institutional development legitimate. Second, we contribute to IB research on environmental sustainability by highlighting MNEs responses to government emission policy, focusing on firm-level decisions. Understanding MNEs' investment decisions to comply with countries' environmental programs is important, as MNEs have an essential role in addressing climate change given their influence on smaller firms and consumers (Christmann, 2004; Dowell et al., 2000; Perez-Batres et al., 2012). However, most of the extant IB literature has paid limited attention to government emission policies and their role at the firm level (Bass & Grøgaard, 2021; Li & Zhou, 2017). Our study seeks to fill this gap, responding to the call by Bass and Grøgaard (2021, p. 814) for IB scholars to do more to generate "novel insights into global grand challenges" such as the long-term energy transition. Finally, our study contributes to research on the environmental strategies of MNEs (Li & Zhou, 2017; Perez-Batres et al., 2012) by examining how MNEs respond to host countries' investments in and adoption of renewable energy as compared to efforts in reducing greenhouse gas emissions. For MNEs, understanding the regulatory cost of non-compliance and the potential reputation risks of environmental disasters is crucial to assess the challenges and opportunities of the global effort to combat climate change.

2 Theory

2.1 Effective Institutions and Foreign Investment: The Case of Sustainability Regulation

IB scholars have long considered institutions essential in influencing MNEs' subsidiary investments (Alvi, 2012; Dorobantu et al., 2017; García-Canal & Guillén, 2008; Liu & Li, 2019). In analyzing the institutional contexts—that produce strict or lax environmental regulations—the IB literature has adopted various perspectives, such as sociological institutionalism (Scott, 2001), historical institutionalism (March & Olsen, 1983), new institutional economics (North, 1990, 1991), among others (for a review, see Aguilera & Grøgaard, 2019; Cuervo-Cazurra et al., 2019). New institutional economics is a strand of institutional theory that argues that firms and individuals have objectives and strive to achieve them within the constraints imposed by institutions (Aguilera & Grøgaard, 2019; Cuervo-Cazurra et al., 2019). The theory depicts institutions as limitations on market activities that are more conducive to market transactions if they are predictable (North, 1990; Williamson, 2000). In this paper, we rely on new institutional economics (North, 1990, 1991) for two reasons. First, in contrast to other streams of institutional theory, this perspective emphasizes formal institutions (Aguilera & Grøgaard, 2019; Cuervo-Cazurra et al., 2019) and policy contexts (García-Canal & Guillén, 2008; Henisz, 2000). This makes it an appropriate perspective for our study, as we study the effects of host government (environmental) policy adoption on MNEs' subsidiary investments. Second, new institutional economics is the most frequently adopted perspective by IB scholars (Aguilera & Grøgaard, 2019; Georgallis et al., 2020). This allows us to contribute to the broader debate in the IB literature on the role of institutional contexts in relation to MNEs' foreign subsidiary investments.

Following the new institutional economics perspective of institutional theory, we consider host country environmental policy as the "rules of the game" (North, 1990, p. 3) that through formal controls force MNEs behavior to conform to national goals that seek to alter industry behavior (Andreou & Kellard, 2021; Backman et al., 2017). Institutions may be informal (e.g., norms, customs, and values) or formal (e.g., laws, regulations, and policies). We focus on formal institutions such as government policies enacted to control business conduct because such formal policies define what economic activities are permissible and profitable in a host country (North, 1991). Thus, we examine a set of institutional mechanisms targeted at national sustainability efforts. Prior work in IB has studied how environmental policies affect foreign MNEs investments (Bu & Wagner, 2016; Georgallis et al., 2020). They find that policy efforts decrease (Eskeland & Harrison, 2003; Taylor, 2005) as well as increase (García-Quevedo & Jové-Llopis, 2021; Holburn, 2012) MNEs foreign investments. They propose various explanations for why some firms either react positively or negatively to stricter environmental regulations but find no uniform explanation (Bu & Wagner, 2016). Eskeland and Harrison (2003) show that MNEs "flock" to countries with weak

environmental regulations. Bu and Wagner (2016) argue that MNEs with environmental capabilities prefer to invest in countries with stricter environmental policies. Georgallis et al. (2020) argue that MNEs engage in "jurisdiction shopping" by investing in countries with more generous environmental policies.

In line with prior work, we posit that institutional developments, particularly environmental regulations, affect MNEs foreign investments but extend this argument by hypothesizing that this effect is mediated by the presence of effective institutions—an alignment between policy and tangible outcomes with respect to GHGE and RRE—that reduce uncertainty by providing a dependable framework for economic exchange. Thus, environmental policies aligned to tangible outcomes, ensure transparency and predictability of policy adoption in a host country, and hence attract MNEs. North (1991, p. 98) posits that "*institutions and the effectiveness of enforcement* […] *determine the cost of transacting. Effective institutions raise the benefits of cooperative solutions* [between institutional settings and firms]". Following North (1991), we expect the alignment of formal institutions and tangible actions to increase countries' appeal as investment locations. This is so because both institutional developments and the effectiveness of their enforcement provide the incentive structure of an economy (North, 1991).

In the present context, effective institutional environments mandate increased environmental sustainability, which results in two types of tangible outcomes: GHGE reduction and an increase in RRE. In the following paragraphs, we develop hypotheses that link each policy outcome with MNEs foreign direct investments, arguing for overall mediating effects. We follow prior IB literature (e.g., Djodat & zu Knyphausen-Aufseß, 2017; Döring et al., 2021) and present competing hypotheses that argue for a positive and negative association between GHGE reduction and MNEs subsidiary investment and a positive relationship between an increase in RRE and MNEs subsidiary investment.

2.2 National Institutions and Tangible Sustainability Outcomes

Formal institutions, such as laws enacted to protect the environment, provide an incentive structure for the economy to reach its objectives. As the need to reduce GHGE has become a central policy issue for most governments (Guest, 2010), many countries convey their commitment to reducing GHGE through legal means such as the enactment of laws or participation in international environmental treaties (Georgallis et al., 2020; Hartmann & Uhlenbruck, 2015). Globally, the adoption of the UN SDGs and the Paris Climate Agreement (PCA) in 2015 were pivotal moments (Montiel et al., 2021; Sachs & Sachs, 2021). Prior to the SDGs and the PCA, a similar pivotal moment was the signing of the Kyoto Protocol in December 1997[1] (Grubb et al., 2018). The purpose of the Kyoto Protocol is to contain GHGE through measures that reflect heterogeneity in national emission levels, wealth, and capacity

[1] The Kyoto Protocol was established as an amendment to the UN Framework Convention on Climate Change to reduce global GHGE. It entered into force in February 2005 after ratification by Russia, which met the critical thresholds of 55% of world emissions and 55% of countries.

(Böhringer, 2003). Participants of the Kyoto Protocol agreed to reduce GHGEs to "a level that would prevent dangerous anthropogenic interference with the climate system" "(United Nations, 1992, p. 9)". To reach long-term GHGE goals, countries target two main types of outcomes: the direct reduction of GHGE and the stimulation of renewable energy production (Hall & Vredenburg, 2003; Lewis & Wiser, 2007). While these are not the only measures countries take, they subsume efforts, formalized in national and supranational policy targets, and create comparable measures across countries (Guest, 2010; Montiel et al., 2021; Sachs & Sachs, 2021). Thus, policies that pertain to reducing GHGE set goals related directly to GHGE targets. For instance, Japan—the fourth largest emitter globally—introduced the Keidanren Voluntary Action Plan on the environment after ratifying the Kyoto Protocol. This altered Japanese industries and changed firms' behaviors (Andreou & Kellard, 2021) as firms committed to specific CO_2 emission goals (Lau et al., 2009). Countries that signed and ratified the Kyoto Protocol produced more tangible CO_2 reductions (Iwata & Okada, 2014; Kumazawa & Callaghan, 2012). Consequently, it is pertinent that formal institutions in the form of the enactment of policies regarding the reduction of GHGE serve their purpose and manage to reduce GHGE. We follow prior work in this regard and put forth the following baseline hypothesis:

Baseline Hypothesis 1a: *The signing of environmental treaties, such as the Kyoto Protocol, is associated with a reduction in a country's greenhouse gas emissions.*

Many countries that sign and ratify environmental treaties, such as the Kyoto Protocol, also commit additional resources to carbon-reducing activities. Notably, they enact policies frameworks targeted directly at renewable energy (Georgallis et al., 2020). For instance, Bass and Grøgaard (2021) report that the Kingdom of Morocco reformed its environmental policies to increase renewable energy generation to comply with its pledge to reduce GHGE. Similarly, several EU countries, the UK and Japan have adopted policies to support electricity generation from renewables by mandating firms to source a certain percentage of their energy from renewable sources (Dong & Shimada, 2017). Thus, in line with the Kyoto Protocol, several countries enacted policies regarding renewable energy (Hartmann & Uhlenbruck, 2015; Kumazawa & Callaghan, 2012). This is reflected in renewable energy policies and targets that suggest the need for substantial growth in investments in renewables. For instance, in 2009, the EU endorsed a binding target of generating 20% of all its energy—doubling from 10%—from renewables by 2020 (REN21, 2010). While earlier studies have linked the signing of the Kyoto Protocol with a reduction in CO_2 (Iwata & Okada, 2014; Kumazawa & Callaghan, 2012), evidence on the impact of the Kyoto Protocol on increased RRE remains anecdotal. We argue that to achieve GHGE targets while at the same time maintaining economic growth, countries that signed the Kyoto Protocol reduce uncertainties about the host environment to MNEs and other external stakeholders by relying more in renewable energy to indicate their participation and compliance. Formally, we hypothesize that:

Hypothesis 1b: *The signing of environmental treaties, such as the Kyoto Protocol, is associated with countries' increased reliance on renewable energy.*

2.3 Tangible Environmental Outcomes and Subsidiary Investments

So far, we have argued that effective institutions ensure reduction in uncertainty through the adoption of policies to reduce GHGE and increase RRE and subsequently achieve tangible outcomes in their environmental commitments. However, the impact of effective institutions with respect to GHGE on foreign MNEs investment is not straightforward. Earlier studies suggest that governments that impose strict environmental policies on firms to limit GHGE may poison the host country environment for MNEs (Bu & Wagner, 2016; Davies & Vadlamannati, 2013; Eskeland & Harrison, 2003) because MNEs may prefer countries with lax environmental standards as compliance with environmental policies are costly (Cole, 2004; Kellenberg, 2009; Rezza, 2015). In the US, for instance, MNEs cost of complying with environmental standards is estimated to be between 1.5 and 2.5% of annual GDP (Berman & Bui, 2001). Thus, governments may dissuade foreign investments if they enforce stricter environmental standards for MNEs to reduce GHGE because it increases the cost of doing business. As a result, MNEs may reorganize their activities by shifting polluting productions to less regulated countries (Li & Zhou, 2017). Such location arbitrage strategies allow MNEs to enjoy lower environmental compliance costs (Taylor, 2005).

Moreover, strict standards may reduce productivity because MNEs may be forced to shift resources to "non-productive uses," such as environmental auditing and waste treatment (Haveman & Christainsen, 1981). Extending prior work, we propose that this may be the case when countries' institutional developments are effective, i.e., tangible GHGE reductions follow environmental policies. Hence, due to the increased costs of compliance, we propose that once governments align their policy efforts to reduce GHGE and reach tangible reductions, MNEs reduce their investments in a host country.

> Hypothesis 2a: *Tangible reductions in local greenhouse gas emissions negatively mediate the relationship between signing environmental treaties, such as the Kyoto Protocol, and foreign subsidiary investments.*

However, MNEs environmental commitments are driven by several motives (Andreou & Kellard, 2021; Arora & Cason, 1996; Baek, 2017). While some MNEs are concerned about the legal costs of environmental violations (Christmann & Taylor, 2006), studies show that many MNEs voluntarily exceed local environmental regulations (Arora & Cason, 1996; Christmann & Taylor, 2001). These MNEs even use their resources to protect the environment beyond strict local regulatory requirements (Moon & DeLeon, 2007; Porter & Van der Linde, 1995) and see environmental outcomes as an opportunity to improve their economic performance (Christmann & Taylor, 2006; Porter & Van der Linde, 1995). For instance, Christmann and Taylor (2001) find that Chinese MNEs are more likely to self-regulate and adopt stricter environmental standards than locally mandated if they seek to export to countries where customers use environmental performance as a supplier-selection criterion. Thus, MNEs to some degree accept environmental standards as a catalyst for performance (Bull & Miklian, 2019; Kolk, 2016) due to the increasing societal expectations for superior environmental performance (Kolk & Pinkse, 2005, 2007).

Further, previous studies show that the presence of environmental policies and pressure from shareholders positively affect MNEs' environmental investments (Dasgupta et al., 2000; Henriques & Sadorsky, 1996). When firms from countries with stricter environmental standards invest in countries with lax environmental regulations, they are more likely to self-regulate by implementing stricter standards in their subsidiaries (Christmann & Taylor, 2006; Li & Zhou, 2017) because adopting consistent internal practices for foreign subsidiaries in lax environments decrease coordination costs and regulatory risks (Li & Zhou, 2017). Extending prior work, we propose that MNEs increase subsidiary investments when countries' institutions are effective, i.e., tangible GHGE reductions follow such environmental policies. However, when governments fail to produce tangible outcomes from new regulations—which reduces uncertainties—MNEs are more likely to perceive the new regulation as illegitimate and less relevant to them. Thus, we hypothesize that because MNEs prefer transparency and predictability of policy adoption in host countries, once governments align policy efforts to reduce GHGE with the concrete action of reducing them, MNEs are likely to increase their presence in the host country by expanding their local footprint and adhering to the new regulatory framework.

Hypothesis 2b: *Tangible reductions in local greenhouse gas emissions positively mediate the relationship between signing environmental treaties, such as the Kyoto Protocol, and foreign subsidiary investments.*

A key avenue regarding sustainable policies and tangible outcomes is countries' increased reliance on renewable energy.[2] Hence, a key consideration for MNEs in countries investing in renewable energy to meet their GHGE targets is the firm's possibility to obtain green advantages. When countries develop environmental policies and support those policies with tangible infrastructures in alignment with the policies, it enables MNEs that operate in these countries to acquire "green" firm-specific advantages (Gao & Bansal, 2013; Rugman & Verbeke, 1998). Such advantages include higher-level learning to cope with regulatory and business-related challenges (Sharma & Vredenburg, 1998). For instance, Miyamoto and Takeuchi (2019) study the Kyoto Protocol's impact on the diffusion of sustainable technologies and find that international patent applications increased after the protocol's adoption. Furthermore, when MNEs invest in countries with stricter environmental policies and develop green advantages, they are able to diffuse learnings among their subsidiaries (Bu & Wagner, 2016).

As a result, MNEs can benefit from countries committed to sustainability through tangible investments in RRE and, as such, are more likely to invest in them amid stringent policies, given the technological infrastructure opportunities. Therefore, when deciding on the location of their international investments, MNEs are more likely to choose foreign locations that are prone to transition to renewable energy (Georgallis et al., 2020; Henzelmann & Billen, 2021). Extending these earlier studies, we propose that MNEs are likely to invest in countries with effective institutions,

[2] We would like to emphasize that GHGE reduction is often coupled with efforts aimed at increasing RRE.

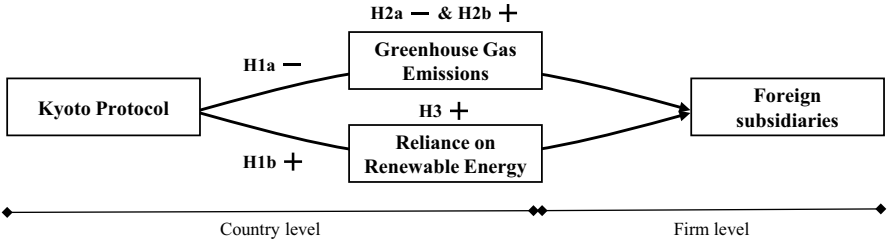

Fig. 1 Theoretical model

which implies they simultaneously adopt environmental regulations and show tangible efforts such as increased reliance on renewable energy in enforcing the environmental regulations. For the relationship between environmental treaties, RRE, and foreign subsidiary investment, we hypothesize (For a summary of the theoretical framework, see Fig. 1):

> Hypothesis 3: *Tangible increases in local reliance on renewable energy positively mediate the relationship between signing environmental treaties, such as the Kyoto Protocol, and foreign subsidiary investments.*

3 Research Design

3.1 Sample

We analyze MNEs' strategic decisions regarding foreign subsidiary investments using a sample of U.S. public firms from 2000 to 2015. To construct the sample, we first obtained a list of all publicly traded U.S. firms across industries for the relevant period from Standard and Poor's COMPUSTAT database. We complement this database with information on firms' foreign activity from the Nexis Lexis Corporate Affiliations Database. An advantage of this database is that it contains detailed information about firms' domestic and foreign subsidiaries across industries. The approach of combining these databases is similar to (Lee & Song, 2012) and (Phene & Almeida, 2008), who studied the foreign investments of MNEs. Similar to prior studies (e.g., Li et al., 2018), after combining the databases, we excluded firms with no foreign subsidiary identified in the Nexis Lexis Corporate Affiliations Database.

We obtain data on countries' participation in the Kyoto Protocol from the UN Treaty Collection. GHGE levels are collected from the World Resources Institute, and data on renewable energy are collected from the International Renewable Energy Agency (IRENA) database. The use of the databases is consistent with recent studies focusing on GHGE (Cifci & Oliver, 2018; Huenteler et al., 2016; Van der Zwaan et al., 2013). We merge these data with country-level data collected through a variety of sources: the World Bank database for country information, the World Bank ICSID database for disputes between firms and host countries, the World Bank WGI indicators for institutional quality, UNCTAD data for bilateral investment treaties, UN data on council voting (Voeten et al., 2009), and the Uppsala database for armed

Table 1 List of countries in the sample ranked by number of observations

#	Country	Obs	#	Country	Obs	#	Country	Obs
1	United Kingdom	2924	47	Nigeria	80	93	Nicaragua	3
2	Canada	2521	48	Venezuela	66	94	Lebanon	2
3	Germany	1928	49	El Salvador	64	95	Mozambique	2
4	France	1708	50	Morocco	60	96	Rwanda	2
5	Australia	1426	51	Guatemala	59	97	Togo	2
6	Japan	1392	52	Slovenia	54	98	Albania	1
7	Netherlands	1269	53	Kenya	51	99	Bangladesh	1
8	Singapore	1212	54	Bolivia	46	100	Belarus	1
9	Mexico	1091	55	Pakistan	45	101	Libya	1
10	Italy	1085	56	Bahrain	43	102	Senegal	1
11	China	1010	57	Bulgaria	42			
12	Belgium	954	58	Croatia	41			
13	Spain	927	59	Cyprus	41			
14	Brazil	882	60	Jamaica	34			
15	Switzerland	836	61	Ukraine	32			
16	Sweden	774	62	Estonia	30			
17	India	745	63	Paraguay	29			
18	Ireland	587	64	Honduras	28			
19	Denmark	583	65	Lithuania	28			
20	Austria	555	66	Latvia	27			
21	Malaysia	490	67	Gabon	26			
22	South Africa	473	68	Ghana	20			
23	New Zealand	445	69	Angola	16			
24	Thailand	444	70	Botswana	15			
25	Poland	443	71	Jordan	13			
26	Norway	439	72	Mauritius	12			

Table 1 (continued)

#	Country	Obs	#	Country	Obs	#	Country	Obs
27	Finland	357	73	Iceland	11			
28	Israel	337	74	Tunisia	10			
29	Philippines	317	75	Zambia	10			
30	Portugal	312	76	Sri Lanka	9			
31	Colombia	309	77	Azerbaijan	8			
32	Hungary	308	78	Kazakhstan	8			
33	Chile	296	79	Kuwait	8			
34	Greece	261	80	Qatar	7			
35	Russia	247	81	Armenia	6			
36	Turkey	247	82	Guyana	6			
37	Indonesia	227	83	North Macedonia	6			
38	Egypt	157	84	Oman	6			
39	Peru	146	85	Papua New Guinea	6			
40	Luxembourg	137	86	Syria	5			
41	Costa Rica	136	87	Fiji	4			
42	Slovakia	124	88	Namibia	4			
43	Saudi Arabia	113	89	Algeria	3			
44	Panama	112	90	Cameroon	3			
45	Ecuador	84	91	Equatorial Guinea	3			
46	Uruguay	84	92	Malawi	3			

conflicts. We exclude observations for which we do not have data across all variables. We further exclude the activities of financial institutions (SIC 6) to keep our focus on strategic subsidiary investments (Bertrand et al., 2016). As we focus on MNEs' foreign subsidiary investments, all firm-level variables are aggregated at the parent level. The final sample contains 882 firms with operations in 102 countries for the period 2000–2015 (A detailed composition of the subsidiaries' country locations can be found in Table 1). This results in a panel of 6315 firm-country dyads, in which a firm can have one dyad per year in multiple foreign countries i.e. if a firm has subsidiaries in five different country locations in a given year, then it will have five dyads. Furthermore, firms can enter or leave the panel at different times, like prior work (e.g., Folta & Sohl, 2021).

3.2 Measures

The dependent variable, *Subsidiary investment,* is measured as the natural logarithm of the yearly number of foreign subsidiaries that a firm has in an individual foreign country. This measure is suited for our setting, as it captures the relative increase (or decrease) in foreign investment. Prior studies also used the number of subsidiaries to study MNE investment levels (Holburn & Zelner, 2010; Oh & Oetzel, 2011, 2017). The independent variable, *Kyoto Protocol,* is measured as a binary variable equal to 1 if a host country has ratified the Kyoto Protocol in any given year and 0 otherwise (Kumazawa & Callaghan, 2012). We focus on the ratified Kyoto Protocol because recent findings show that signed—but not ratified—treaties do not represent credible national commitments (Albino-Pimentel et al., 2018; Haftel, 2010). The mediator *GHGE* (greenhouse gas emissions) is captured as the natural logarithm in Mt CO_2 equivalent per country, while the mediator *RRE* (reliance on renewable energy) is measured as the natural logarithm of the renewable electricity generation in GWh per country. Both measures are log-transformed as they are highly skewed.

We include control variables at the country, country-dyad and firm levels. We control for factors at the host country level that influences a country's attractiveness as a location for foreign investment (Blake & Moschieri, 2017; Li & Vashchilko, 2010). These factors are *GDP per capita*, yearly *GDP growth*, *natural resources*, *inflation,* total international *trade exposure,* the number of *armed conflicts*, and the number of *dispute* cases that firms have had with the foreign subsidiary's host country. We further control for *institutional quality* in enforcing regulation based on the principal component of the World Bank's WGI indicators: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption (Kraay et al., 2010). We further control for political constraints with the *Polcon III* index (Henisz, 2000). We control for country-specific efforts to promote investment by including bilateral trade agreements (*Investment treaty*) (Albino-Pimentel et al., 2018) and the *political affinity* between the host country and the US (Bertrand et al., 2016; Gartzke, 1998; Voeten et al., 2009). Lastly, we control for the natural logarithm of the annual USD amount

invested in the subsidiary country through grant programs (*IMF GRAC*) under the International Monetary Fund schemes (Dreher et al., 2009) and *trade dependence* with the US as prior research (Holburn & Zelner, 2010) finds that such factors approximate country dependency.

We control for firm-specific factors that prior work has identified as relevant to foreign subsidiary investments. We account for firm size using the natural logarithm of *total assets*, firm profitability using the inverse hyperbolic sine of *EBITDA*,[3] and firm debt using *leverage*. In addition, we include the domestic subsidiary count (*number of local subsidiaries*) to account for a firm's domestic market concentration. We compute the Herfindal–Hirschmann Index in the main industry based on its two-digit SIC code (*US subsidiary HHI*). The underlying logic is that market concentration facilitates collusion. Thus, competition is more aggressive in low-concentration markets, changing the incentives for firms to seek expansion opportunities abroad (Fletcher, 2001). Table 2 describes all variables and their source.

3.3 Methods

We use panel OLS to analyze the association between countries' ratification of the *Kyoto Protocol*, the mediators (*RRE*, *GHGE*), and *Subsidiary investments*. We lag the independent variables one year to consider the time required between observing a change in policy (i.e., ratification of the Kyoto Protocol) and MNEs' decision to act upon it (i.e., change the number of subsidiaries). We use parent firm–country random effects to study the variance between firms and countries, and year-fixed effects are used to account for time-specific effects. In further robustness tests, we study the within-variance in any dyad and use firm-country fixed effects to capture unobserved, time-invariant heterogeneity at the dyad level. We assume complete mediation in which "*the entire effect of X on Y is thought to operate through M*" (DeVaro, 2011, p. 336). To conduct our mediation analyses and compute indirect effects, we utilize Sobel (1982) tests and a Monte Carlo method to calculate the confidence intervals (Selig & Preacher, 2008). Our data is multilevel; the dependent variable—*Subsidiary investments*—is at the parent firm level (lvl 1), while the mediating variables—RRE and GHGE are at the country level (lvl 2). In building the multilevel mediation model, we follow Krull and MacKinnon (2001) in ensuring that each level 2 variable influences a level 2 variable or lower. We use fixed-effects models to make inferences about the indirect effects, as random variation across both levels is fixed, permitting a standard mediation model (Bauer et al., 2006; Selig & Preacher, 2010).

[3] We use the inverse hyperbolic sine transformation to approximate the logarithm. This is recommended when dealing with positive, negative, as well as zero-valued observations (Burbidge et al., 1988; Witte et al., 2017).

Table 2 Descriptions of variables, their measurements, and sources

Variables	Measurement	Source
Dependent variable		
Subsidiary investments	Natural logarithm of number of foreign subsidiaries in a given country and year (e.g., Oh & Oetzel, 2011)	LexisNexis Corporate Affiliations
Independent variable		
Kyoto Protocol	Dummy variable equal to 1 if the country ratified the Kyoto agreement in a given year, 0 otherwise	UN Treaty Collection
Mediators		
GHGE	Inverse hyperbolic sine of the subsidiary country Mt CO2 equivalent of greenhouse gas emissions	World Resources Institute
RRE	Natural logarithm of the total renewable electricity capacity and generation in GWh	IRENA
Control variables		
Institutional quality	Index that captures the principal components of government effectiveness, regulatory quality, rule of law and control of corruption in the host country	World Bank WGI Indicators
Polcon III	Political Constraint Index (POLCON) measures the degree of political constraints of a country	Hensisz, 2000 (2017 Data Release)
GDP per capita	Natural logarithm of the subsidiary country's GDP per capita	World Bank
GDP growth	Inverse hyperbolic sine of the subsidiary country's GDP growth	World Bank
Natural resources	Natural logarithm of the subsidiary country's natural resources	World Bank
Armed conflicts	Natural logarithm of the number of subsidiary country armed conflicts	UCDP/PRIO
Inflation	Inverse hyperbolic sine of subsidiary country inflation	World Bank
Trade exposure	Natural logarithm of the subsidiary country's combined import and export	UNCTAD

Table 2 (continued)

Variables	Measurement	Source
Disputes	Count number of disputes between US and the host country	ICSID World Bank
Investment treaty	Dummy variable equal to 1 if the country has a treaty with US and 0 otherwise	UNCTAD
Political affinity	Dyadic affinity between two countries I and j, measured as VA(i, j) = (#agree(i, j) − #disagree(i, j))/total mutual votes(i, j) (Gartzke, 1998)	Voeten et al. (2009) (UN General Assembly)
Trade dependence	TDijt = Tijt/Tjt, where TDijt is subsidiary country j's trade dependence on the U.S. in year t, Tijt is total trade between the U.S. and country j in year t, and Tjt is total international trade by country j in year t	UNCTAD
IMF GRAC	Natural logarithm of the number of IMF country GRAC	IMF databases
Total assets	Natural logarithm of total assets	Compustat Annual
Leverage	Total liabilities/total assets	Compustat Annual
EBITDA	EBITDA as defined in Compustat Database	Compustat Annual
Number US subsidiaries	Total count of US subsidiaries	LexisNexis Corporate Affiliations
US subsidiary HHI (SIC)	Concentration in US subsidiaries' industry as Herfindal–Hirschmann Index	LexisNexis Corporate Affiliations

4 Results

4.1 Main Results

Table 3 presents the descriptive statistics, Table 4 the correlation matrix, and Table 5 the regression results of the OLS regression models estimating the effects of *Kyoto Protocol* on *GHGE* and *RRE* and the models estimating the effects of *GHGE* and *RRE* on *Subsidiary investments*. As shown in Table 3, an MNE has on average 1.4 subsidiaries per country (ln = 0.335). 23% of observations are from the period before countries ratify the Kyoto Protocol (mean *Kyoto Protocol* = 0.771), and differences in *GHGE*[4] (sd = 1.513) and *RRE* (sd = 1.881) indicate the sample's suitability to study the hypothesized relationships. Examining the explanatory variables for multicollinearity, we find that both mediators are correlated at 0.57. We find no indication that multicollinearity is a concern in our data (the highest variance inflation factor [VIF] = 8.01, associated with *GDP per capita*, and mean VIF = 2.78).

Model 1 (Table 5) shows the results of the OLS regression estimating the effect of *Kyoto Protocol* on *GHGE,* and Model 2 shows the results for *Kyoto Protocol* on *RRE*. Model 1 shows a negative, significant result ($\beta = -0.056$, $p = 0.014$) of *Kyoto Protocol* on GHGE. Accounting for the log transformation of *GHGE*,[5] *Kyoto Protocol* decreases *GHGE* in the next year by 5.45%. This is in line with prior work (Cifci & Oliver, 2018) and hypothesis 1a, which asserts that ratifying the Kyoto Protocol is associated with a decrease in *GHGE*. Model 2 shows a positive, significant result ($\beta = 0.172$, $p < 0.001$) of *Kyoto Protocol* on RRE. Accounting for the log transformation of *RRE, Kyoto Protocol* is associated with an increase in *RRE* in the next year by 18.77%. This is consistent with hypothesis 1b, that ratifying the Kyoto Protocol is associated with increased RRE.

Model 3 (Table 5) reports estimates of the association between *GHGE* and *Subsidiary investments,* and Model 4 estimates the association between *RRE* and *Subsidiary investments.* Model 3 provides evidence for a positive, significant association between *GHGE* and *Subsidiary investments* ($\beta = 0.012$, $p = 0.018$), and Model 4 provides evidence for a positive association between *RRE* and *Subsidiary investments* ($\beta = 0.011$, $p = 0.017$). To increase the robustness of our findings, we include both mediators, *GHGE* and *RRE*, in Model 5. In this model, evidence of an association between *RRE* and *Subsidiary investments* remains robust ($\beta = 0.009$, $p = 0.041$), but we find weaker evidence for a positive association between *GHGE* and *Subsidiary investments* ($\beta = 0.010$, $p = 0.054$). Probing this effect further and trying to increase the robustness of our findings, we winsorize *GHGE* and *RRE* at the 1% and 99% levels to remove outliers. With this, Model 6 reports a strongly positive association

[4] We want to note that GHGE can take a negative value because new standards to report GHGE include net efforts, including Land use, land-use change and forestry (LULUCF). E.g.: https://ourworldindata.org/grapher/per-capita-ghg-emissions?tab=chart&country=~CHL.

[5] Effect size in % = $(\exp(\beta) - 1) \times 100)$, in our case $((\exp(-0.056) - 1) \times 100) = 5.45\%$.

Table 3 Descriptive statistics

	Variables	(1) N	(2) Mean	(3) sd	(4) Min	(5) Max
1	Subsidiary investments	32,598	0.335	0.581	0	3.664
2	Kyoto Protocol	32,598	0.771	0.420	0	1
3	GHGE	32,598	6.403	1.513	−5.143	10.05
4	RRE	32,598	10.37	1.881	0	14.14
5	Institutional quality	32,598	0.002	2.283	−7.356	2.861
6	Polcon III	32,598	0.430	0.161	0	0.726
7	GDP per capita	32,598	10.01	1.082	5.294	11.69
8	GDP growth	32,598	1.727	3.069	−14.38	24.05
9	Natural resources	32,598	0.854	0.844	0	4.083
10	Armed conflicts	32,598	0.694	1.670	0	6.919
11	Inflation	32,598	1.403	0.890	−4.796	4.690
12	Trade exposure	32,598	19.89	1.190	12.67	22.18
13	Disputes	32,598	0.195	0.664	0	4
14	Investment treaty	32,598	0.267	0.443	0	1
15	Political affinity	32,598	0.496	0.163	0.111	0.952
16	Trade dependence	32,598	0.162	0.192	0.006	0.766
17	IMF GRAC	32,598	1.086	4.767	0	23.87
18	Total assets	32,598	5.503	2.687	0.001	12.35
19	Leverage	32,598	4.135	125.6	0	9788
20	EBITDA	32,598	2.902	3.992	−8.687	11.70
21	Number US subsidiaries	32,598	2.480	1.320	0	6.054
22	US subsidiary HHI (SIC)	32,598	0.196	0.258	0.003	1

Table 4 Correlation matrix

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	Subsidiary investments	1.00																				
2	Kyoto Protocol	−0.02	1.00																			
3	GHGE	0.12	−0.05	1.00																		
4	RRE	0.11	0.06	0.57	1.00																	
5	Institutional quality	0.13	−0.08	−0.29	−0.03	1.00																
6	Polcon III	0.04	0.01	−0.08	0.05	0.32	1.00															
7	GDP per capita	0.13	0.16	−0.23	0.01	0.86	0.26	1.00														
8	GDP growth	−0.04	−0.08	0.17	0.05	−0.27	−0.26	−0.35	1.00													
9	Natural resources	−0.04	0.03	0.21	0.09	−0.48	−0.18	−0.48	0.21	1.00												
10	Armed conflicts	−0.07	0.03	0.21	0.03	−0.61	0.02	−0.61	0.16	0.33	1.00											
11	Inflation	−0.08	−0.06	0.12	−0.04	−0.43	−0.07	−0.47	0.15	0.46	0.37	1.00										
12	Trade exposure	0.19	0.22	0.61	0.50	0.25	0.05	0.41	−0.01	−0.26	−0.15	−0.25	1.00									
13	Disputes	0.09	−0.18	0.18	0.32	0.14	0.02	0.09	−0.02	0.19	−0.06	0.00	0.09	1.00								
14	Investment treaty	−0.07	−0.12	0.07	−0.02	−0.34	−0.18	−0.43	0.14	0.47	0.38	0.41	−0.34	0.34	1.00							
15	Political affinity	0.14	0.01	−0.03	0.13	0.62	0.37	0.65	−0.33	−0.36	−0.35	−0.34	0.28	0.22	−0.27	1.00						

Table 4 (continued)

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
16	Trade dependence	0.08	−0.23	0.22	0.30	−0.06	−0.02	−0.07	0.02	0.32	0.17	0.11	0.02	0.74	0.48	0.04	1.00					
17	IMF GRAC	−0.07	−0.11	−0.09	−0.08	−0.22	−0.09	−0.25	0.04	0.00	0.14	0.12	−0.30	−0.05	0.16	−0.09	−0.04	1.00				
18	Total assets	0.03	0.11	−0.01	0.01	0.00	0.01	0.04	−0.02	−0.01	0.00	−0.02	0.03	−0.01	−0.03	0.05	−0.02	−0.01	1.00			
19	Leverage	0.01	−0.02	0.01	0.00	0.01	0.01	0.00	0.00	−0.00	−0.00	−0.00	0.00	0.01	0.00	0.00	0.01	−0.00	−0.06	1.00		
20	EBITDA	0.05	0.08	−0.01	−0.01	0.00	0.00	0.03	−0.01	0.00	0.00	−0.01	0.02	−0.01	−0.01	0.02	−0.03	−0.00	0.78	−0.03	1.00	
21	Number US subsidiaries	0.36	−0.11	−0.13	−0.10	−0.09	−0.01	−0.13	0.03	0.07	0.04	0.06	−0.23	−0.01	0.05	−0.11	−0.00	0.08	0.02	0.02	0.06	1.00
22	US subsidiary HHI (SIC)	−0.24	0.03	0.11	0.07	0.07	−0.01	0.08	−0.03	−0.07	−0.03	−0.04	0.16	−0.00	−0.03	0.09	−0.00	−0.05	−0.01	−0.01	−0.03	−0.81

Table 5 Main regressions results

Dependent variables	(1) OLS	(2)	(3)	(4)	(5)	(6)
	GHGE	RRE	Invest	Invest	Invest	Invest
Institutional quality	−0.092	−0.054	0.031	0.029	0.031	0.032
	(0.008)	(0.012)	(0.006)	(0.006)	(0.006)	(0.006)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Polcon III	−0.275	0.001	−0.020	−0.024	−0.023	−0.025
	(0.046)	(0.025)	(0.022)	(0.022)	(0.022)	(0.022)
	[0.000]	[0.954]	[0.357]	[0.273]	[0.290]	[0.240]
GDP per capita	−0.543	−0.318	−0.033	−0.034	−0.030	−0.022
	(0.027)	(0.026)	(0.014)	(0.014)	(0.014)	(0.013)
	[0.000]	[0.000]	[0.017]	[0.014]	[0.033]	[0.086]
GDP growth	−0.009	−0.003	−0.002	−0.002	−0.002	−0.003
	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
	[0.000]	[0.114]	[0.011]	[0.012]	[0.014]	[0.007]
Natural resources	0.141	−0.140	0.009	0.010	0.008	0.004
	(0.022)	(0.021)	(0.009)	(0.009)	(0.009)	(0.010)
	[0.000]	[0.000]	[0.319]	[0.258]	[0.374]	[0.678]
Armed conflicts	0.010	−0.024	−0.008	−0.007	−0.007	−0.005
	(0.007)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
	[0.114]	[0.000]	[0.044]	[0.061]	[0.061]	[0.201]
Inflation	0.042	0.001	0.004	0.005	0.005	0.003
	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
	[0.000]	[0.829]	[0.281]	[0.209]	[0.248]	[0.377]

Table 5 (continued)

Dependent variables	(1) OLS	(2)	(3)	(4)	(5)	(6)
	GHGE	RRE	Invest	Invest	Invest	Invest
Trade exposure	1.016	0.459	0.092	0.096	0.087	0.071
	(0.012)	(0.026)	(0.008)	(0.007)	(0.008)	(0.011)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Disputes	0.033	0.014	−0.021	−0.021	−0.022	−0.019
	(0.003)	(0.002)	(0.004)	(0.004)	(0.004)	(0.004)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Investment treaty	−0.003	−0.016	0.026	0.027	0.026	0.026
	(0.015)	(0.014)	(0.013)	(0.013)	(0.013)	(0.013)
	[0.861]	[0.261]	[0.055]	[0.047]	[0.050]	[0.038]
Political affinity	0.850	0.488	0.264	0.271	0.264	0.207
	(0.154)	(0.080)	(0.066)	(0.065)	(0.059)	(0.058)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Trade dependence	0.559	3.208	0.228	0.206	0.207	0.163
	(0.060)	(0.139)	(0.043)	(0.043)	(0.043)	(0.040)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
IMF GRAC	0.004	0.006	0.001	0.000	0.000	0.001
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
	[0.016]	[0.000]	[0.484]	[0.567]	[0.585]	[0.460]
Total assets			−0.009	−0.009	−0.009	−0.007
			(0.003)	(0.003)	(0.003)	(0.003)
			[0.001]	[0.001]	[0.001]	[0.014]

Table 5 (continued)

Dependent variables	(1) OLS	(2)	(3)	(4)	(5)	(6)
	GHGE	RRE	Invest	Invest	Invest	Invest
Leverage			−0.000	−0.000	−0.000	−0.000
			(0.000)	(0.000)	(0.000)	(0.000)
			[0.949]	[0.942]	[0.930]	[0.963]
EBITDA			0.006	0.006	0.006	0.005
			(0.001)	(0.001)	(0.001)	(0.001)
			[0.000]	[0.000]	[0.000]	[0.000]
Number US subsidiaries			0.190	0.190	0.190	0.168
			(0.009)	(0.009)	(0.009)	(0.008)
			[0.000]	[0.000]	[0.000]	[0.000]
US subsidiary HHI (SIC)			0.268	0.268	0.268	0.211
			(0.027)	(0.027)	(0.027)	(0.026)
			[0.000]	[0.000]	[0.000]	[0.000]
Kyoto Protocol	*−0.056*	*0.172*			*0.007*	*0.002*
	(0.023)	*(0.014)*			*(0.021)*	*(0.020)*
	[0.014]	*[0.000]*			*[0.739]*	*[0.914]*
GHGE			*0.012*		*0.010*	*0.018*
			(0.005)		*(0.005)*	*(0.009)*
			[0.018]		*[0.054]*	*[0.047]*
RRE				*0.011*	*0.009*	*0.014*
				(0.004)	*(0.005)*	*(0.005)*
				[0.017]	*[0.041]*	*[0.002]*

Table 5 (continued)

Dependent variables	(1) OLS	(2)	(3)	(4)	(5)	(6)
	GHGE	RRE	Invest	Invest	Invest	Invest
Constant	− 8.595	3.281	− 1.987	− 2.072	− 1.981	− 1.754
	(0.338)	(0.469)	(0.171)	(0.164)	(0.171)	(0.177)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Firm-country years	32,598	32,598	32,598	32,598	32,598	31,306
Firm-country dyads	6315	6315	6315	6315	6315	6128
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Chi^2	16,740	4709	1347	1345	1354	1399
R^2	0.742	0.340	0.211	0.209	0.210	0.193

Robust s.e in parentheses. P-values in brackets. All independent and control variables lagged 1 year

between *RRE* and *Subsidiary investments* (β = 0.014, p = 0.002) and a weakly positive association between *GHGE* and *Subsidiary investments* (β = 0.018, p = 0.047) (We further test our models with a two-year lag for the independent variable and mediators. Please see Table 6). Accounting for the log transformation of both *GHGE* and *Subsidiary investments*, a one-unit increase (1 Mt) of *GHGE* is associated with an increase of 1.3% in local subsidiaries.[6] For comparison, a large flagship coal plant in Europe emits between 20–30 Mt annually,[7] which means an increase in subsidiaries by 26–39% from the mean of 1.4. Accounting for the log transformation of *RRE* and *Subsidiary investments*, a one-unit increase in *RRE* (1 GWh) is associated with an increase in *Subsidiary investments* in the next year of 0.98%. Again, for comparison, the largest German solar power plant (Neuhardenberg) produces on average 20 GWh.[8]

4.2 Interaction Effects: Institutional Quality and Capital Intensity

While we find evidence corroborating our hypotheses, we further test whether these effects are contingent on country-level and firm-level characteristics. Regarding country-level characteristics, we test whether the institutional quality of host countries moderates the relationship between the mediators and subsidiary investment. To that end, we interact the previously introduced variable *Institutional quality*. The rationale behind this interaction is that countries with well-defined institutions reduce uncertainty in policy-making outcomes (Cuervo-Cazurra et al., 2019). Developed institutions affect the foreign investment strategy of firms (Meyer et al., 2009) because they reduce negative government interference in the economy (Cuervo-Cazurra et al., 2019). This creates further stability for investments. Therefore, high-quality institutions positively moderate the association between the mediators and *Subsidiary investments.* Table 7 (Model 1) reports the results of this interaction. We find that *institutional quality* positively moderates the relationship between *RRE* and *Subsidiary investments* (β = 0.009, p < 0.001), but not between *GHGE* and *Subsidiary investments* (β = −0.001, p = 0.630). This speaks to our argument that MNEs evaluate institutional environments and their tangible outcomes in unison. However, MNEs seem to take stronger signals from *RRE* than *GHGE.* Plotting the marginal effects of Model 1 (Table 7) graphically in Fig. 2 underscores this.

Regarding firm-level characteristics, we test whether the capital intensity of the MNE moderates the relationship between the mediators and subsidiary investment. To that end, we interact capital intensity with GHGE and RRE. The rationale behind this interaction is that different firms have different environmental

[6] To obtain the true coefficient, it must be transformed, so that $\Delta(y) = (1 + \Delta(x))^{\beta(x)} - 1 = 2^{0.018} - 1 = 0.013$.

[7] Retrieved September 29, 2021; https://www.statista.com/chart/17582/megatonnes-of-co2-equivalent-in-the-eu/.

[8] Retrieved September 29, 2021; https://www.power-technology.com/projects/neuhardenberg-solar-power-plant.

Table 6 Robustness checks of the main analyses with a two-year lag

Dependent variables	(1)	(2)	(3)	(4)	(5)
	OLS				
	GHGE	RRE	Invest	Invest	Invest
Institutional quality	−0.099	−0.040	0.033	0.031	0.032
	(0.009)	(0.012)	(0.007)	(0.007)	(0.007)
	[0.000]	[0.001]	[0.000]	[0.000]	[0.000]
Polcon III	−0.303	0.013	−0.015	−0.017	−0.018
	(0.053)	(0.027)	(0.024)	(0.024)	(0.024)
	[0.000]	[0.641]	[0.544]	[0.486]	[0.445]
GDP per capita	−0.550	−0.344	−0.036	−0.033	−0.032
	(0.031)	(0.029)	(0.017)	(0.016)	(0.017)
	[0.000]	[0.000]	[0.029]	[0.043]	[0.057]
GDP growth	−0.010	−0.003	−0.002	−0.002	−0.002
	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
	[0.000]	[0.101]	[0.029]	[0.033]	[0.034]
Natural resources	0.174	−0.115	0.012	0.012	0.011
	(0.022)	(0.022)	(0.011)	(0.010)	(0.011)
	[0.000]	[0.000]	[0.267]	[0.237]	[0.290]
Armed conflicts	0.009	−0.038	−0.005	−0.004	−0.004
	(0.008)	(0.006)	(0.004)	(0.004)	(0.004)
	[0.239]	[0.000]	[0.227]	[0.319]	[0.314]
Inflation	0.042	−0.003	0.006	0.006	0.006
	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)
	[0.000]	[0.637]	[0.197]	[0.140]	[0.154]

Table 6 (continued)

Dependent variables	(1)	(2)	(3)	(4)	(5)
	OLS				
	GHGE	RRE	Invest	Invest	Invest
Trade exposure	1.036	0.445	0.103	0.101	0.096
	(0.013)	(0.029)	(0.009)	(0.008)	(0.009)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Disputes	0.033	0.010	−0.019	−0.019	−0.020
	(0.004)	(0.002)	(0.005)	(0.005)	(0.005)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Investment treaty	0.005	−0.002	0.024	0.025	0.023
	(0.018)	(0.016)	(0.016)	(0.016)	(0.016)
	[0.769]	[0.915]	[0.124]	[0.119]	[0.143]
Political affinity	1.075	0.490	0.256	0.256	0.264
	(0.174)	(0.090)	(0.074)	(0.073)	(0.069)
	[0.000]	[0.000]	[0.001]	[0.000]	[0.000]
Trade dependence	0.577	3.199	0.232	0.205	0.210
	(0.066)	(0.156)	(0.049)	(0.049)	(0.049)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
IMF GRAC	0.005	0.006	0.001	0.000	0.001
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
	[0.010]	[0.000]	[0.448]	[0.542]	[0.535]
Total assets			−0.009	−0.009	−0.009
			(0.003)	(0.003)	(0.003)
			[0.011]	[0.012]	[0.012]

Table 6 (continued)

Dependent variables	(1)	(2)	(3)	(4)	(5)
	OLS				
	GHGE	RRE	Invest	Invest	Invest
Leverage			−0.000	−0.000	−0.000
			(0.000)	(0.000)	(0.000)
			[0.063]	[0.060]	[0.057]
EBITDA			0.006	0.006	0.006
			(0.001)	(0.001)	(0.001)
			[0.000]	[0.000]	[0.000]
Number US subsidiaries			0.197	0.197	0.197
			(0.010)	(0.010)	(0.010)
			[0.000]	[0.000]	[0.000]
US subsidiary HHI (SIC)			0.292	0.292	0.292
			(0.030)	(0.029)	(0.029)
			[0.000]	[0.000]	[0.000]
Kyoto Protocol t − 2	*0.011*	*0.210*			*0.016*
	(0.026)	*(0.013)*			*(0.019)*
	[0.671]	*[0.000]*			*[0.418]*
GHGE t − 2			*0.008*		*0.005*
			(0.005)		*(0.005)*
			[0.131]		*[0.300]*
RRE t − 2				*0.011*	*0.010*
				(0.005)	*(0.005)*
				[0.023]	*[0.040]*

Table 6 (continued)

Dependent variables	(1) OLS	(2)	(3)	(4)	(5)
	GHGE	RRE	Invest	Invest	Invest
Constant	−8.960	3.821	−2.131	−2.186	−2.134
	(0.374)	(0.526)	(0.194)	(0.188)	(0.194)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Firm-country years	25,979	25,979	25,979	25,979	25,979
Firm-country dyads	5089	5089	5089	5089	5089
Year FE	Yes	Yes	Yes	Yes	Yes
Chi^2	14,542	3904	1160	1159	1166
R^2	0.756	0.344	0.236	0.235	0.236

Robust s.e in parentheses. P-values in brackets. All independent and control variables lagged 1 year

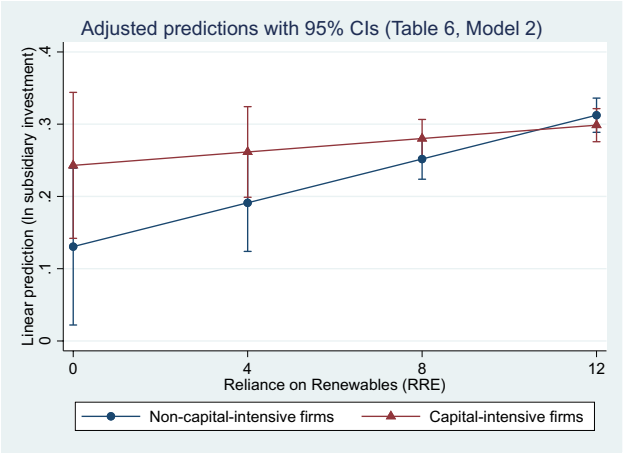

Fig. 2 Marginal effects of the interaction between institutional quality and RRE

footprints and subsequently different pressures to reduce greenhouse gas emissions and switch to renewable energy (Fujii & Managi, 2013; Fujii et al., 2013; Perez-Batres et al., 2012). In an initial study, Cole and Elliott (2005) find that pollution-intensive MNEs are more likely to decrease their investment due to more stringent environmental regulations and switch part of their operations to countries with more lax regulations. However, not to the extent predicted given the high capital intensity and the resulting challenges in relocating operations in such industries. These findings are further reaffirmed by Berry et al., (2021), showing that differences in industries' pollution intensity drive firms' decisions to outsource their operations to pollution havens. For instance, oil and gas firms have the highest pollution intensity in terms of air and water pollution (Cole & Elliott, 2005; Tarim et al., 2021) and are at the continuous focus of climate activists (Hiatt et al., 2015). Hence, following these studies, we create a binary variable for capital intensity equal to 1 if the firm has a capital intensity (revenue divided by total assets) above the sample median and 0 otherwise—to capture the capital-intensive firms and the industries they belong to that rely on physical assets and further to test whether the derived differences in pollution strengthen or weaken the effect of *RRE and GHGE* on s*ubsidiary investment*. Our baseline assumption is that capital-intensive firms can be expected to avoid countries with more stringent environmental efforts. Thus, capital intensity likely negatively moderates the association between the mediators and *Subsidiary investments.*

Table 7 (Model 2) reports the results of this interaction. We find that *capital intensity* negatively moderates the relationship between *RRE* and *Subsidiary investments* ($\beta = -0.011$, $p = 0.022$), but not between *GHGE* and *Subsidiary investments* ($\beta = 0.002$, $p = 0.652$). However, MNEs seem to take stronger signals from *RRE* than *GHGE.* Plotting the marginal effects of Model 2 (Table 7) graphically in Fig. 3 underscores this negative moderation effect. For an overview of the

Table 7 Interaction effects with institutional quality and capital intensity

Dependent variables	(1)	(2)
	OLS	
	Invest	Invest
Institutional quality	−0.055	0.032
	(0.017)	(0.006)
	[0.001]	[0.000]
Polcon III	−0.026	−0.016
	(0.022)	(0.023)
	[0.234]	[0.496]
GDP per capita	−0.026	−0.028
	(0.014)	(0.015)
	[0.061]	[0.053]
GDP growth	−0.002	−0.002
	(0.001)	(0.001)
	[0.037]	[0.019]
Natural resources	0.005	0.008
	(0.009)	(0.010)
	[0.590]	[0.434]
Armed conflicts	−0.007	−0.006
	(0.004)	(0.004)
	[0.085]	[0.140]
Inflation	0.006	0.006
	(0.004)	(0.004)
	[0.113]	[0.199]
Trade exposure	0.095	0.089
	(0.009)	(0.009)
	[0.000]	[0.000]

Table 7 (continued)

Dependent variables	(1)	(2)
	OLS	
	Invest	Invest
Disputes	−0.022	−0.022
	(0.004)	(0.005)
	[0.000]	[0.000]
Investment treaty	0.027	0.027
	(0.013)	(0.014)
	[0.047]	[0.050]
Political affinity	0.199	0.273
	(0.061)	(0.061)
	[0.001]	[0.000]
Trade dependence	0.144	0.210
	(0.044)	(0.045)
	[0.001]	[0.000]
IMF GRAC	0.000	0.000
	(0.001)	(0.001)
	[0.721]	[0.568]
Total assets	−0.009	−0.011
	(0.003)	(0.003)
	[0.001]	[0.001]
Leverage	−0.000	−0.000
	(0.000)	(0.000)
	[0.931]	[0.919]

Table 7 (continued)

Dependent variables	(1) OLS	(2)
	Invest	Invest
EBITDA	0.006	0.006
	(0.001)	(0.001)
	[0.000]	[0.000]
Number US subsidiaries	0.190	0.197
	(0.009)	(0.009)
	[0.000]	[0.000]
US subsidiary HHI (SIC)	0.267	0.286
	(0.027)	(0.028)
	[0.000]	[0.000]
Kyoto Protocol	0.002	0.004
	(0.021)	(0.022)
	[0.909]	[0.871]
GHGE	*0.011*	*0.010*
	(0.005)	*(0.006)*
	[0.043]	*[0.108]*
RRE	*0.015*	*0.015*
	(0.005)	*(0.005)*
	[0.001]	*[0.005]*
GHGE × institutional quality	*−0.001*	
	(0.002)	
	[0.630]	
RRE × institutional quality	*0.009*	
	(0.002)	
	[0.000]	

Table 7 (continued)

Dependent variables	(1) OLS	(2)
	Invest	Invest
Capital intensity		*0.097*
		(0.041)
		[0.019]
GHGE × capital intensity		*0.002*
		(0.005)
		[0.652]
RRE × capital intensity		*− 0.011*
		(0.005)
		[0.022]
Constant	− 2.182	− 2.120
	(0.173)	(0.179)
	[0.000]	[0.000]
Firm-country years	32,598	30,399
Firm-country dyads	6315	5882
Year FE	Yes	Yes
Chi^2	1366	1303
R^2	0.209	0.221

Robust s.e in parentheses. P-values in brackets. All independent and control variables lagged 1 year

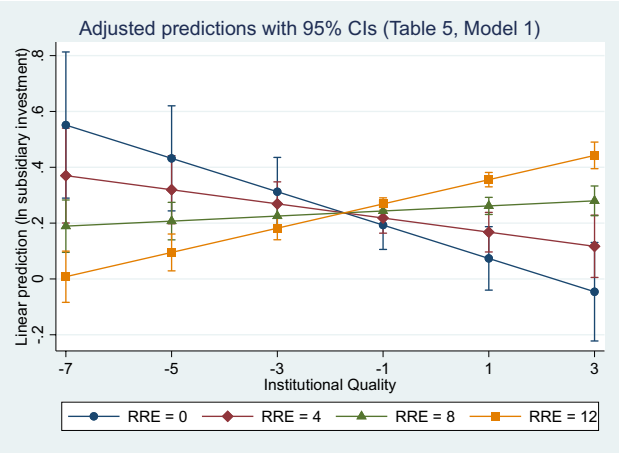

Fig. 3 Marginal effects of the interaction between capital intensity and RRE

top 20 capital-intensive industries based on firms' capital intensity, in the sample that capture 90% of our observations, please see Table 8.

4.3 Analysis of Mediation

While our models separate the first-stage and second-stage analyses, we specify a full mediation model to test the indirect effects of *Kyoto Protocol* on *Subsidiary investments* (DeVaro, 2011). We posit that *RRE* and *GHGE* mediate the association between *Kyoto Protocol* and *Subsidiary investments*. We test both mediators in a panel setting (Agarwal et al., 2016) using the product of coefficients approach (Preacher & Hayes, 2008). In this approach, the effect of an independent variable (X) on a dependent variable (Y) is mediated by a mediator (M). We calculate this effect by multiplying β(X)—derived from regressions with M as the dependent variable and X as the independent variable—with β(M)—derived from regressions with Y as the dependent and X and M as the independent variables (Sauermann, 2018). Given our large dataset and computational limitations, we follow Agarwal et al. (2016) and use Sobel (1982) tests and a Monte Carlo method to calculate confidence intervals (CI) (Selig & Preacher, 2008), as appropriate under such conditions (Hayes & Preacher, 2010; Preacher & Hayes, 2008).

In Table 10, we report the results of the Sobel (1982) tests and Monte Carlo CI (Selig & Preacher, 2008) for both mediators. The z-score column contains the Sobel test statistics. Table 10 contains the lower and upper bounds of a 95% CI of the indirect effect calculated by a Monte Carlo method with 20,000 repetitions. Under the assumption of normal sampling errors β(X) and β(M), random draws from the distributions of the coefficients are performed to simulate the magnitude of the indirect effect; a CI is then constructed from these simulations (Agarwal et al., 2016; Selig & Preacher, 2008). Based on the fixed-effects models in Table 10, which is necessary

Table 8 Top 20 capital intensive industries within the sample

#	Obs	Sector	SIC	Industry description
1	3107	Manufacturing	28	Chemicals and allied products
2	1889	Transportation and utilities	49	Electric, gas, and sanitary services
3	1776	Manufacturing	38	Measuring, analyzing, and controlling instruments, etc
4	1628	Services	73	Business Services
5	1357	Manufacturing	36	Electronic and electrical equipment and components, except computer
6	1209	Manufacturing	35	Industrial and commercial machinery and computer equipment
7	1023	Mining	13	Oil and gas extraction
8	1008	Transportation and utilities	48	Communications
9	766	Services	79	Amusement and recreation services
10	646	Mining	10	Metal mining
11	432	Manufacturing	22	Textile mill products
12	373	Services	80	Health services
13	304	Construction	15	Building construction general contractors and operative builders
14	281	Manufacturing	20	Food and kindred products
15	229	Construction	16	Heavy construction other than building construction contractors
16	228	Services	72	Personal services

Table 8 (continued)

#	Obs	Sector	SIC	Industry description
17	179	Services	75	Automotive repair, services, and parking
18	174	Services	87	Engineering, accounting, research, management, and related services
19	169	Services	78	Motion pictures
20	157	Transportation and utilities	40	Railroad transportation

Table 9 Robustness checks of the main analyses with firm-country dyad fixed effects

Dependent variables	(1)	(2)	(3)	(4)	(5)	(6)
	OLS					
	GHGE	RRE	Invest	Invest	Invest	Invest
Institutional quality	0.015	−0.087	−0.003	−0.000	−0.000	0.004
	(0.013)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
	[0.234]	[0.000]	[0.838]	[0.992]	[0.987]	[0.792]
Polcon III	−0.286	0.014	−0.003	−0.004	−0.002	−0.007
	(0.052)	(0.024)	(0.026)	(0.026)	(0.026)	(0.025)
	[0.000]	[0.567]	[0.892]	[0.863]	[0.950]	[0.794]
GDP per capita	−0.121	0.041	−0.030	−0.031	−0.030	−0.029
	(0.063)	(0.033)	(0.038)	(0.038)	(0.038)	(0.037)
	[0.055]	[0.211]	[0.431]	[0.416]	[0.428]	[0.433]
GDP growth	−0.003	0.003	−0.000	−0.000	−0.000	−0.001
	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
	[0.034]	[0.030]	[0.711]	[0.644]	[0.735]	[0.567]
Natural resources	−0.007	−0.095	−0.010	−0.009	−0.005	0.007
	(0.036)	(0.022)	(0.021)	(0.021)	(0.021)	(0.021)
	[0.851]	[0.000]	[0.637]	[0.682]	[0.814]	[0.753]
Armed conflicts	0.024	−0.017	−0.008	−0.007	−0.007	−0.007
	(0.009)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
	[0.007]	[0.001]	[0.144]	[0.189]	[0.174]	[0.193]
Inflation	0.039	0.018	0.005	0.005	0.006	0.003
	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
	[0.000]	[0.000]	[0.217]	[0.211]	[0.208]	[0.413]

Table 9 (continued)

Dependent variables	(1) OLS	(2)	(3)	(4)	(5)	(6)
	GHGE	RRE	Invest	Invest	Invest	Invest
Trade exposure	0.334	−0.107	0.008	0.011	0.008	0.002
	(0.053)	(0.039)	(0.041)	(0.041)	(0.041)	(0.041)
	[0.000]	[0.007]	[0.847]	[0.784]	[0.852]	[0.952]
Disputes	0.008	0.007	−0.016	−0.016	−0.015	−0.012
	(0.003)	(0.002)	(0.004)	(0.004)	(0.004)	(0.004)
	[0.002]	[0.001]	[0.000]	[0.000]	[0.000]	[0.002]
Investment treaty	−0.002	−0.000	0.031	0.031	0.031	0.031
	(0.016)	(0.014)	(0.015)	(0.015)	(0.015)	(0.014)
	[0.878]	[0.982]	[0.042]	[0.044]	[0.039]	[0.029]
Political affinity	−0.517	0.001	0.085	0.087	0.043	0.026
	(0.203)	(0.079)	(0.101)	(0.101)	(0.089)	(0.088)
	[0.011]	[0.994]	[0.399]	[0.387]	[0.629]	[0.767]
Trade dependence	−0.718	3.707	0.319	0.202	0.207	0.082
	(0.304)	(0.251)	(0.215)	(0.214)	(0.214)	(0.220)
	[0.018]	[0.000]	[0.137]	[0.345]	[0.334]	[0.709]
IMF GRAC	0.004	0.005	0.000	−0.000	−0.000	0.000
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
	[0.014]	[0.000]	[0.946]	[0.870]	[0.859]	[0.969]
Total assets			−0.018	−0.018	−0.018	−0.013
			(0.006)	(0.006)	(0.006)	(0.006)
			[0.003]	[0.003]	[0.003]	[0.024]

Table 9 (continued)

Dependent variables	(1) OLS	(2)	(3)	(4)	(5)	(6)
	GHGE	RRE	Invest	Invest	Invest	Invest
Leverage			0.000	0.000	0.000	0.000
			(0.000)	(0.000)	(0.000)	(0.000)
			[0.819]	[0.838]	[0.798]	[0.773]
EBITDA			0.005	0.005	0.005	0.005
			(0.001)	(0.001)	(0.001)	(0.001)
			[0.000]	[0.000]	[0.000]	[0.001]
Number US subsidiaries			0.168	0.167	0.167	0.146
			(0.013)	(0.013)	(0.013)	(0.013)
			[0.000]	[0.000]	[0.000]	[0.000]
US subsidiary HHI (SIC)			0.252	0.251	0.251	0.197
			(0.033)	(0.033)	(0.033)	(0.032)
			[0.000]	[0.000]	[0.000]	[0.000]
Kyoto Protocol	*−0.069*	*0.147*			*−0.028*	*−0.034*
	(0.028)	*(0.012)*			*(0.021)*	*(0.020)*
	[0.014]	*[0.000]*			*[0.178]*	*[0.088]*
GHGE			*0.006*		*0.005*	*0.037*
			(0.006)		*(0.006)*	*(0.020)*
			[0.342]		*[0.412]*	*[0.068]*
RRE				*0.031*	*0.032*	*0.050*
				(0.016)	*(0.016)*	*(0.016)*
				[0.056]	*[0.048]*	*[0.002]*

Table 9 (continued)

Dependent variables	(1) OLS	(2)	(3)	(4)	(5)	(6)
	GHGE	RRE	Invest	Invest	Invest	Invest
Constant	1.617	10.843	−0.121	−0.419	−0.381	−0.633
	(0.883)	(0.653)	(0.613)	(0.645)	(0.643)	(0.617)
	[0.067]	[0.000]	[0.844]	[0.516]	[0.553]	[0.305]
Firm-country years	32,598	32,598	32,598	32,598	32,598	31,306
Firm-country dyads	6315	6315	6315	6315	6315	6128
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm-country dyad FE	Yes	Yes	Yes	Yes	Yes	Yes
F-value	95	165.6	22.25	22.28	21.10	20.03
R^2	0.046	0.522	0.112	0.112	0.112	0.102

Robust s.e in parentheses. P-values in brackets. All independent and control variables lagged 1 year

Table 10 Mediation analysis

DV: subsidiary investments								
IV: Kyoto Protocol	IV-DV (c)	IV-M (a)	SE_a	M-DV (b)	SE_b	Z	MC 95% CI	
M: GHGE	−0.034	−0.056	0.028	0.037	0.02	−1.35808	−0.006	0.0003
M: RRE	−0.034	0.147	0.012	0.05	0.016	3.028025	0.003	0.012

$z = a \times b/\text{sqrt}(a^2SE\_b^2 + b^2SE\_a^2)$. Effect ratio = a × b/c. 95% CI = 95% confidence interval for the magnitude of the indirect effect using Monte Carlo Method for Assessing Mediation with 20,000 repetitions (Selig & Preacher, 2008). Direct effect is insignificant and positive

for our multilevel setting (Bauer et al., 2006; Selig & Preacher, 2010), we examine the association of the mediators (*RRE* and *GHGE*) and *Subsidiary investments*. The results of the fixed effects regressions in Table 9 are consistent and significant for the associations between *Kyoto Protocol* and *GHGE* (hypothesis 1a) and *RRE* (hypothesis 1b), as well as for the associations between *RRE* and *Subsidiary investments* (hypothesis 3). Table 10 (Model 5 and 6) cannot support our prior assertions for the negative (hypothesis 2a) or positive (hypothesis 2b) association between *GHGE* and *Subsidiary investments.* The results of the indirect effects (Table 9) suggest that *RRE* mediates the relationship between *Kyoto Protocol* and *Subsidiary investments*, while *GHGE* does not satisfy the conditions for mediation. The z-score of the Sobel test is significant for *RRE* and insignificant for *GHGE*. The Monte Carlo simulation suggests that the CI of the indirect effect associated with *RRE* is significantly different from 0, while the indirect effect associated with *GHGE* is not. This allows us to reject the null hypothesis that *RRE* has no indirect effect, but we cannot reject the hypothesis that *GHGE* has no indirect effect (Agarwal et al., 2016) (Table 10).

In summary, our results point toward measurable effects of effective institutions on the relationship between the presence of environmental policies, supported by tangible outcomes in the form of renewable energy on MNEs' subsidiary investments. However, we do not find consistent evidence across models that MNEs largely adapt their investing behavior due to changes in host countries' GHGEs, when accounting for other country, dyad, and firm characteristics.

5 Discussion

This study offers novel insight into how firms adjust their investment in response to environmental policies and tangible environmental outcomes in foreign host countries. Analyzing 882 firms and their ties to 102 host countries, we find that adopting environmental policies, specifically the Kyoto Protocol, is associated with MNEs' subsidiary investments, albeit indirectly. Consistent with prior work (Cifci & Oliver, 2018), we find that ratifying the Kyoto Protocol is associated with a decrease in *GHGE* and increased reliance on renewables. Hence, confirming anecdotal evidence from the industry press that countries that signed the Kyoto Protocol accompany that with actual investments in renewable energy sources in order to comply with their

pledge (Bass & Grøgaard, 2021). We extend these findings and argue that countries that signed the Kyoto Protocol and took purposive actions to comply with their pledge to combat climate change are more attractive to MNEs. The reason for that is the alignment of institutional pressures with tangible outcomes (i.e., increased reliance on renewables) that reduces uncertainty in policy-making outcomes (Cuervo-Cazurra et al., 2019; Georgallis et al., 2020; North, 1991). However, the relationship between the presence of environmental policies, concrete actions to reduce GHGE and MNEs subsidiary investments is a complex one; further investigation is needed to understand the underlying mechanisms driving MNEs subsidiary investment in countries where governments are taking purposive actions to reduce GHGE. We provide some initial evidence that indeed MNEs increase their investment in countries with higher GHGE, consistent with several studies on pollution havens (Berry et al., 2021). However, we cannot establish a mechanism between signing of environmental treaties, reduction in GHGE and subsequent subsidiary investment.

Notably, MNEs respond positively to environmental policies by increasing their investments when these policies are followed by concrete national commitments in increasing reliance on renewable energy. Such concrete commitments reduce institutional uncertainty by providing a dependable framework for economic transactions and enable MNEs to gain green advantages. While prior research on the impact of environmental policies on foreign MNEs' investments has argued that environmental policy efforts decrease MNEs foreign investments, without accounting for the different role of tangible outcomes (Eskeland & Harrison, 2003; Taylor, 2005), we document that the presence of environmental policies, accompanied by concrete actions in increasing focus on renewable energy leads to increase subsidiary investments. We attribute these findings to effective institutional environments (North, 1990, 1991; Saka-Helmhout & Geppert, 2011) in which formal policy is aligned with tangible economic output. Our focus on two types of tangible outcomes: reductions in GHGE and increase in RRE helps reconcile previous studies that find that stricter environmental policies both increase (Bu & Wagner, 2016; Li & Zhou, 2017) and decrease foreign investment (Berry et al., 2021).

Last, our analysis also elaborates on the boundary conditions in the association between the two types of tangible outcomes: GHGE and RRE and subsidiary investment. We find that firms are even more responsive to increased RRE in countries with higher institutional quality that further reinforces the role of stable and predictable institutions. However, some MNEs, particularly those in capital-intensive sectors that are responsible for the highest levels of pollution (Cole & Elliott, 2005), prefer countries with lax environmental regulations (Dowell et al., 2000; Taylor, 2005). We discuss below the implications of our findings for research and policy.

5.1 Implications for IB Theory

Global warming and climate change are issues that affect every country and require both supranational and local efforts to be addressed. National environmental policies play an important role in mitigating GHGE and thereby reducing the impact of climate change. In line with earlier IB research (Bass & Grøgaard, 2021;

García-Quevedo & Jové-Llopis, 2021; Georgallis et al., 2020; Holburn, 2012), our study shows that governments' policy intervention has important implications for MNEs' strategic behavior and climate change. We extend IB research in several important ways. *First*, we highlight the role of effective institutions—captured by tangible outcomes related to GHGE reduction and RRE increase—in mediating the effect of environmental policies on MNEs' investment strategies as they create a stable and dependable institutional environment. Our results provide evidence that the relationship between country-level (or even supranational) policy developments and firm-specific decisions—altering foreign investments in a given host country—is mediated by the presence of tangible outcomes that firms can easily assess in the case of RRE. This argument is further reinforced by the positive moderating effect of institutional quality in the relation RRE—subsidiary investment, where firms increase even more their investments in high institutional quality countries. *Second*, we differentiate and test for the distinct direct and mediating effects of GHGE and RRE. A country's increased investment in renewables positively affects foreign investments and further mediates the effect of policies on foreign investments. Our focus on (i) effective institutions and (ii) two types of tangible outcomes: reductions in GHGE and increase in RRE helps reconcile previous studies that find that stricter environmental policies both increase (Bu & Wagner, 2016; Li & Zhou, 2017) and decrease foreign investment (Berry et al., 2021). For instance, lower GHGE reduce foreign investment levels, while a focus on renewables has a positive effect. *Finally*, we show the importance of inter-firm differences for improving our understanding of firms' idiosyncratic responses to environmental policies. Specifically, capital intensity plays an important role on the extent to which firms are responsive to certain policies, in particular with respect to renewable energy reliance.

5.2 Implications for MNEs

Our study has implications for MNEs' role in responding the complexities of global warming and climate change, through cross-border investments. Our findings show that the national alignment of environmental policies with tangible outcomes affects firms' choices to increase investment in foreign locations. Specifically, countries that enact environmental sustainability laws, followed by increased reliance on renewable energy, attract more investments. While we cannot directly test for green advantages, it appears that are potential benefits to investing in foreign locations that put in place environmental policies and assert strong institutional influence to achieve concrete results. MNEs cannot afford to pay lip service to environmental policy and climate change issues; it must be integrated into their strategies and practices.

5.3 Implications for the Design and Effectiveness of Policy Regimes

The findings of our study suggest that government policies can play a key role in combating global warming and climate change. Consequently, our study has implications for policymakers that design environmental policy frameworks intended to mitigate the damages of climate change. Our results suggest that while MNEs may

still flight to pollution havens (Daly, 1994) by investing in countries with higher GHGE, one way of being both more sustainable and increasing investment is by increasing reliance on renewable energy. Consistent with previous studies (Bu & Wagner, 2016), our finding suggests that MNEs seem to invest in countries with stricter environmental policies when they are able to develop green advantages and to diffuse learnings among their subsidiaries. Thus, for policymakers, fear of losing foreign investments to countries with lax environmental regulations need not deter them from adopting policies to achieve greater environmental sustainability. In addition, we find that some MNEs, particularly those in capital-intensive sectors that are responsible for the highest levels of pollution (Cole & Elliott, 2005), are less likely to respond to increased reliance on renewables. This highlights the need for more meaningful and effective policy interventions and engagement with firms that contribute more to climate change.

5.4 Limitations and Future Research

Notwithstanding the study's contributions, our study has some limitations. First, our findings are constrained by our data that rely on only US firms and their subsidiary investments. Our data allow us to draw conclusions about US firms only, albeit the importance of US MNEs in the global economy. Future research could extend our work by examining the effect of GHGE policies on firms from different regions. In recent years, MNEs from emerging markets have been investing globally. The rise of MNEs from emerging markets has attracted significant research interest by IB scholars (for a review, see Adarkwah & Malonæs, 2020; Luo & Zhang, 2016). For instance, while emerging market MNEs engage extensively in corporate social responsibility (CSR) and environmental sustainability reporting as a means of gaining legitimacy, the majority of these sustainability reportings are only symbolic, with sometimes overstated environmental sustainability outcomes (Tashman et al., 2019). IB theory could benefit from an examination of how MNEs from emerging markets adapt their subsidiary investment to different home countries with different environmental policies. Second, MNEs respond to different environmental policy mix—annual environmental taxes rebates, subsidies, tax credits, and regulation—at the firm's level to reduce GHGE is still unclear. Future research can examine how the combination of different specific environmental policies and firm-level characteristics promotes MNEs' adoption of low-carbon and renewable energy solutions.

Last, we look at major strategic changes in investment—the establishment of a new subsidiary or the divestment of an existing subsidiary. While our measure is grounded in previous research on firm investment in foreign locations (Albino-Pimentel et al., 2021; Oetzel & Oh, 2014; Oh & Oetzel, 2017), we are unable to capture in a more granular manner the size of investment in each location, i.e., by looking at the capital invested or the number of employees. Given previous work that suggests that firms might adjust investments gradually, i.e., by increasing or decreasing their ownership share in a host country (Chan & Makino, 2007; Reuer & Tong, 2005), future studies can provide a fuller depiction of firms' response to

environmental policy changes by looking at the size of investment and more subtle changes in ownership in existing foreign subsidiaries.

6 Conclusions

There has been an increased interest in the role of MNEs and governments in solving grand societal challenges, and notably, the long term energy transition to renewable energy solutions as a means to fight climate change. In this study, we build on institutional theory to examine the impact of countries' environmental policies on MNEs' foreign subsidiary investments. We find that the relationship between environmental policy outcomes and MNE subsidiary investments is mediated by the effectiveness—as captured by two tangible outcomes: GHGE and RRE—with which host countries enforce these policies. While a focus on reducing GHGE discourages foreign investment, reliance on renewables induces firms to increase investment in destination countries. Overall, our research has highlighted the importance of alignment between environmental policies and tangible environmental outcomes for altering firms' investment strategies. We hope future research will build on this study to explicate the effectiveness of different types of policy instruments in engaging MNEs in the fight to reduce the impact of climate change.

References

Adarkwah, G. K., & Malonæs, T. P. (2020). Firm-specific advantages: A comprehensive review with a focus on emerging markets. *Asia Pacific Journal of Management*. Online first. https://doi.org/10.1007/s10490-020-09737-7

Agarwal, R., Campbell, B. A., Franco, A. M., & Ganco, M. (2016). What do I take with me? The mediating effect of spin-out team size and tenure on the founder-firm performance relationship. *Academy of Management Journal, 59*(3), 1060–1087.

Aguilera, R. V., & Grogaard, B. (2019). The dubious role of institutions in international business: A road forward. *Journal of International Business Studies*, *50*(1), 20–35.

Albino-Pimentel, J., Dussauge, P., & Shaver, J. M. (2018). Firm non-market capabilities and the effect of supranational institutional safeguards on the location choice of international investments. *Strategic Management Journal, 39*(10), 2770–2793.

Albino-Pimentel, J., Oetzel, J., Oh, C. H., & Poggioli, N. A. (2021). Positive institutional changes through peace: The relative effects of peace agreements and non-market capabilities on FDI. *Journal of International Business Studies*, *52*(7), 1256–1278.

Alvi, F. H. (2012). Rethinking the institutional contexts of emerging markets through metaphor analysis. *Management International Review, 52*(4), 519–539.

Andreou, P. C., & Kellard, N. M. (2021). Corporate environmental proactivity: Evidence from the European Union's emissions trading system. *British Journal of Management, 32*(3), 630–647.

Arora, S., & Cason, T. N. (1996). Why do firms volunteer to exceed environmental regulations? Understanding Participation in EPA'S 33/50 program. *Land Economics*, *72*(4), 413–432.

Backman, C. A., Verbeke, A., & Schulz, R. A. (2017). The drivers of corporate climate change strategies and public policy: A new resource-based view perspective. *Business and Society, 56*(4), 545–575.

Baek, K. (2017). The diffusion of voluntary environmental programs: The case of Iso 14001 in Korea, 1996–2011. *Journal of Business Ethics, 145*(2), 325–336.

Bass, A. E., & Grogaard, B. (2021). The long-term energy transition: Drivers, outcomes, and the role of the multinational enterprise. *Journal of International Business Studies*, *52*(5), 807–823.
Bauer, D. J., Preacher, K. J., & Gil, K. M. (2006). Conceptualizing and testing random indirect effects and moderated mediation in multilevel models: New procedures and recommendations. *Psychological Methods, 11*(2), 142.
Berchicci, L., & King, A. (2007). 11 Postcards from the edge: A review of the business and environment literature. *Academy of Management Annals, 1*(1), 513–547.
Berman, E., & Bui, L. T. (2001). Environmental regulation and productivity: Evidence from oil refineries. *Review of Economics and Statistics, 83*(3), 498–510.
Berry, H., Kaul, A., & Lee, N. (2021). Follow the smoke: The pollution haven effect on global sourcing. *Strategic Management Journal*. https://doi.org/10.1002/smj.3288
Bertrand, O., Betschinger, M.-A., & Settles, A. (2016). The relevance of political affinity for the initial acquisition premium in cross-border acquisitions. *Strategic Management Journal, 37*(10), 2071–2091.
Blake, D. J., & Moschieri, C. (2017). Policy risk, strategic decisions and contagion effects: Firm-specific considerations. *Strategic Management Journal, 38*(3), 732–750.
Böhringer, C. (2003). The Kyoto Protocol: A review and perspectives. *Oxford Review of Economic Policy, 19*(3), 451–466.
Bu, M., & Wagner, M. (2016). Racing to the bottom and racing to the top: The crucial role of firm characteristics in foreign direct investment choices. *Journal of International Business Studies, 47*(9), 1032–1057.
Bull, B., & Miklian, J. (2019). Towards global business engagement with development goals? Multilateral institutions and the SDGs in a changing global capitalism. *Business and Politics, 21*(4), 445–463.
Burbidge, J., Magee, L., & Robb, A. (1988). Alternative transformations to handle extreme values of the dependent variable. *Journal of the American Statistical Association, 83*(401), 123–127.
Chan, C. M., & Makino, S. (2007). Legitimacy and multi-level institutional environments: Implications for foreign subsidiary ownership structure. *Journal of International Business Studies, 38*(4), 621–638.
Christmann, P. (2004). Multinational companies and the natural environment: Determinants of global environmental policy. *Academy of Management Journal, 47*(5), 747–760.
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.
Christmann, P., & Taylor, G. (2006). Firm self-regulation through international certifiable standards: Determinants of symbolic versus substantive implementation. *Journal of International Business Studies, 37*(6), 863–878.
Cifci, E., & Oliver, M. E. (2018). Reassessing the links between GHG emissions, economic growth, and the UNFCCC: A difference-in-differences approach. *Sustainability, 10*(2), 334.
Cole, M. A. (2004). Trade, the pollution haven hypothesis and the environmental Kuznets curve: Examining the linkages. *Ecological Economics, 48*(1), 71–81.
Cole, M. A., & Elliott, R. J. (2005). FDI and the capital intensity of "dirty" sectors: A missing piece of the pollution haven puzzle. *Review of Development Economics, 9*(4), 530–548.
Cuervo-Cazurra, A. (2008). Better the devil you don't know: Types of corruption and FDI in transition economies. *Journal of International Management, 14*(1), 12–27.
Cuervo-Cazurra, A., Mudambi, R., & Pedersen, T. (2019). Clarifying the relationships between institutions and global strategy. *Global Strategy Journal, 9*(2), 151–175.
Daly, H. E. (1994). Fostering environmentally sustainable development: four parting suggestions for the World Bank. *Ecological Economics*, *10*(3), 183–187. https://doi.org/10.1016/0921-8009(94)90106-6
Dasgupta, S., Hettige, H., & Wheeler, D. (2000). What improves environmental compliance? Evidence from Mexican industry. *Journal of Environmental Economics and Management, 39*(1), 39–66.
Davies, R. B., & Vadlamannati, K. C. (2013). A race to the bottom in labor standards? An empirical investigation. *Journal of Development Economics*, *103*, 1–14.
DeVaro, J. (2011). So!Apbox: Editorial essay mediation remediation. *Strategic Organization, 9*(4), 336–348.
Djodat, N., & zu Knyphausen-Aufseß, D. (2017). Revisiting Ghoshal and Bartlett's theory of the multinational corporation as an interorganizational network. *Management International Review, 57*(3), 349–378.

Dong, Y., & Shimada, K. (2017). Evolution from the renewable portfolio standards to feed-in tariff for the deployment of renewable energy in Japan. *Renewable Energy, 107*, 590–596.
Döring, S., Drobetz, W., El Ghoul, S., Guedhami, O., & Schröder, H. (2021). Institutional investment horizons and firm valuation around the world. *Journal of International Business Studies, 52*(2), 212–244.
Dorobantu, S., Kaul, A., & Zelner, B. (2017). Nonmarket strategy research through the lens of new institutional economics: An integrative review and future directions. *Strategic Management Journal, 38*(1), 114–140.
Dowell, G., Hart, S., & Yeung, B. (2000). Do Corporate global environmental standards create or destroy market value? *Management Science, 46*(8), 1059–1074.
Dreher, A., Sturm, J.-E., & Vreeland, J. R. (2009). Global horse trading: IMF loans for votes in the United Nations Security Council. *European Economic Review, 53*(7), 742–757.
Eskeland, G. S., & Harrison, A. E. (2003). Moving to greener pastures? Multinationals and the pollution haven hypothesis. *Journal of Development Economics, 70*(1), 1–23.
Fletcher, R. (2001). A holistic approach to internationalisation. *International Business Review, 10*(1), 25–49.
Folta, T. B. & Sohl, T. (2021). Market exit and the potential for resource redeployment: Evidence from the global retail sector. *Strategic Management Journal* **(forthcoming)**.
Fujii, H., & Managi, S. (2013). Which industry is greener? An empirical study of nine industries in OECD countries. *Energy Policy*, *57*, 381–388.
Fujii, H., Managi, S., & Kaneko, S. (2013). Decomposition analysis of air pollution abatement in China: Empirical study for ten industrial sectors from 1998 to 2009. *Journal of Cleaner Production*, *59*, 22–31.
Gao, J., & Bansal, P. (2013). Instrumental and integrative logics in business sustainability. *Journal of Business Ethics, 112*(2), 241–255.
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.
García-Quevedo, J., & Jové-Llopis, E. (2021). Environmental policies and energy efficiency investments. *An industry-level analysis. Energy Policy*, *156*, 112461.
Gartzke, E. (1998). Kant we all just get along? Opportunity, willingness, and the origins of the democratic peace. *American Journal of Political Science, 42*(1), 1–27.
Georgallis, P., Albino-Pimentel, J., & Kondratenko, N. (2020). Jurisdiction shopping and foreign location choice: The role of market and nonmarket experience in the european solar energy industry. *Journal of International Business Studies*, *52*(5), 853–877.
Grubb, M., Vrolijk, C., & Brack, D. (2018). *Routledge revivals: Kyoto Protocol (1999): A guide and assessment*. Routledge.
Guest, R. (2010). The economics of sustainability in the context of climate change: An overview. *Journal of World Business, 45*(4), 326–335.
Haftel, Y. Z. (2010). Ratification counts: US investment treaties and FDI flows into developing countries. *Review of International Political Economy, 17*(2), 348–377.
Hall, J., & Vredenburg, H. (2003). The challenges of innovating for sustainable development. *MIT Sloan Management Review, 45*(1), 61–68.
Hamprecht, J., & Schwarzkopf, J. (2014). Subsidiary initiatives in the institutional environment. *Management International Review, 54*(5), 757–778.
Hartmann, J., & Uhlenbruck, K. (2015). National institutional antecedents to corporate environmental performance. *Journal of World Business, 50*(4), 729–741.
Haveman, R. H., & Christainsen, G. B. (1981). Environmental regulations and productivity growth. *Natural Resources Journal, 21*(3), 489–509.
Hayes, A. F., & Preacher, K. J. (2010). Quantifying and testing indirect effects in simple mediation models when the constituent paths are nonlinear. *Multivariate Behavioral Research, 45*(4), 627–660.
Henisz, W. J. (2000). The institutional environment for economic growth. *Economics and Politics, 12*(1), 1–31.
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.
Henzelmann, T. & Billen, D. (2021). How countries that pursue green energy policies put themselves at a competitive advantage. Roland Berger Report. https://www.rolandberger.com/en/Insights/Publications/Clean-energy-and-the-reshaping-of-global-value-chains.html

Hiatt, S. R., Grandy, J. B., & Lee, B. H. (2015). Organizational responses to public and private politics: An analysis of climate change activists and US oil and gas firms. *Organization Science, 26*(6), 1769–1786.

Holburn, G. L., & Zelner, B. A. (2010). Political capabilities, policy risk, and international investment strategy: Evidence from the global electric power generation industry. *Strategic Management Journal, 31*(12), 1290–1315.

Holburn, G. L. F. (2012). Assessing and managing regulatory risk in renewable energy: Contrasts between Canada and the United States. *Energy Policy*, *45*, 654–665.

Huenteler, J., Niebuhr, C., & Schmidt, T. S. (2016). The effect of local and global learning on the cost of renewable energy in developing countries. *Journal of Cleaner Production*, *128*, 6–21.

Iwata, H., & Okada, K. (2014). Greenhouse gas emissions and the role of the Kyoto Protocol. *Environmental Economics and Policy Studies, 16*(4), 325–342.

Jaffe, A. B., Peterson, S. R., Portney, P. R., & Stavins, R. N. (1995). Environmental regulation and the competitiveness of US manufacturing: What does the evidence tell us? *Journal of Economic Literature, 33*(1), 132–163.

Kellenberg, D. K. (2009). An empirical investigation of the pollution haven effect with strategic environment and trade policy. *Journal of International Economics, 78*(2), 242–255.

Kolk, A. (2016). The social responsibility of international business: From ethics and the environment to CSR and sustainable development. *Journal of World Business, 51*(1), 23–34.

Kolk, A., & Pinkse, J. (2005). Business responses to climate change: Identifying emergent strategies. *California Management Review, 47*(3), 6–20.

Kolk, A., & Pinkse, J. (2007). Multinationals' political activities on climate change. *Business and Society, 46*(2), 201–228.

Kolk, A., & Pinkse, J. (2008). A Perspective on multinational enterprises and climate change: Learning from "an inconvenient truth"? *Journal of International Business Studies, 39*(8), 1359–1378.

Kraay, A., Kaufmann, D., & Mastruzzi, M. (2010). *The worldwide governance indicators: Methodology and analytical issues*. The World Bank.

Krull, J. L., & MacKinnon, D. P. (2001). Multilevel modeling of individual and group level mediated effects. *Multivariate Behavioral Research, 36*(2), 249–277.

Kumazawa, R., & Callaghan, M. S. (2012). The effect of the Kyoto Protocol on carbon dioxide emissions. *Journal of Economics and Finance, 36*(1), 201–210.

Lau, L. C., Tan, K. T., Lee, K. T., & Mohamed, A. R. (2009). A comparative study on the energy policies in Japan and Malaysia in fulfilling their nations' obligations towards the Kyoto Protocol. *Energy Policy, 37*(11), 4771–4778.

Lawrence, T. B., Suddaby, R., & Leca, B. (2009). *Institutional work: Actors and agency in institutional studies of organizations*. Cambridge University Press.

Lee, S.-H., & Song, S. (2012). Host country uncertainty, intra-MNC production shifts, and subsidiary performance. *Strategic Management Journal, 33*(11), 1331–1340.

Lewis, J. I., & Wiser, R. H. (2007). Fostering a renewable energy technology industry: An international comparison of wind industry policy support mechanisms. *Energy Policy*, *35*(3), 1844–1857.

Li, J., Meyer, K. E., Zhang, H., & Ding, Y. (2018). Diplomatic and corporate networks: Bridges to foreign locations. *Journal of International Business Studies, 49*(6), 659–683.

Li, Q., & Vashchilko, T. (2010). Dyadic military conflict, security alliances, and bilateral FDI flows. *Journal of International Business Studies, 41*(5), 765–782.

Li, X., & Zhou, Y. M. (2017). Offshoring pollution while offshoring production? *Strategic Management Journal, 38*(11), 2310–2329.

Liu, W., & Li, J. (2019). Unbalanced institutions in market transition: How do they matter for firm strategic choices and performance in emerging economies? *Management International Review, 59*(5), 675–702.

Luo, Y., & Zhang, H. (2016). Emerging market MNEs: Qualitative review and theoretical directions. *Journal of International Management, 22*(4), 333–350.

March, J. G., & Olsen, J. P. (1983). The new institutionalism: Organizational factors in political life. *American Political Science Review, 78*(3), 734–749.

Meyer, K. E., Estrin, S., Bhaumik, S. K., & Peng, M. W. (2009). Institutions, resources, and entry strategies in emerging economies. *Strategic Management Journal, 30*(1), 61–80.

Miyamoto, M., & Takeuchi, K. (2019). Climate agreement and technology diffusion: Impact of the Kyoto Protocol on international patent applications for renewable energy technologies. *Energy Policy*, *129*, 1331–1338.

Montiel, I., Cuervo-Cazurra, A., Park, J., Antolín-López, R., & Husted, B. W. (2021). Implementing the United Nations' sustainable development goals in international business. *Journal of International Business Studies, 52*(5), 999–1030.

Moon, S.-G., & DeLeon, P. (2007). Contexts and corporate voluntary environmental behaviors: Examining the EPA's green lights voluntary program. *Organization and Environment, 20*(4), 480–496.

North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge University Press.

North, D. C. (1991). Institutions. *Journal of Economic Perspectives, 5*(1), 97–112.

Oetzel, J. M., & Oh, C. H. (2014). Learning to carry the cat by the tail: Firm experience, disasters, and multinational subsidiary entry and expansion. *Organization Science, 25*(3), 732–756.

Oh, C. H., & Oetzel, J. (2011). Multinationals' response to major disasters: How does subsidiary investment vary in response to the type of disaster and the quality of country governance? *Strategic Management Journal, 32*(6), 658–681.

Oh, C. H., & Oetzel, J. (2017). Once bitten twice shy? E Xperience managing violent conflict risk and MNC subsidiary-level investment and expansion. *Strategic Management Journal, 38*(3), 714–731.

Oliver, C. (1991). Strategic responses to institutional processes. *Academy of Management Review, 16*(1), 145–179.

Penna, C. C. R., & Geels, F. W. (2015). Climate change and the slow reorientation of the American car industry (1979–2012): An application and extension of the dialectic issue lifecycle (DILC) model. *Research Policy, 44*(5), 1029–1048.

Perez-Batres, L. A., Miller, V. V., Pisani, M. J., Henriques, I., & Renau-Sepulveda, J. A. (2012). Why do firms engage in national sustainability programs and transparent sustainability reporting? *Management International Review, 52*(1), 107–136.

Phene, A., & Almeida, P. (2008). Innovation in multinational subsidiaries: The role of knowledge assimilation and subsidiary capabilities. *Journal of International Business Studies, 39*(5), 901–919.

Porter, M. E., & Van der Linde, C. (1995). Toward a new conception of the environment–competitiveness relationship. *Journal of Economic Perspectives, 9*(4), 97–118.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879–891.

REN21. (2010). Renewables 2010 Global Status Report (Paris: REN21 Secretariat). https://stg-wedocs.unep.org/handle/20.500.11822/32291

Reuer, J. J., & Tong, T. W. (2005). Real options in international joint ventures. *Journal of Management, 31*(3), 403–423.

Rezza, A. A. (2015). A meta-analysis of FDI and environmental regulations. *Environment and Development Economics, 20*(2), 185–208.

Rugman, A. M., & Verbeke, A. (1998). Corporate strategies and environmental regulations: An organizing framework. *Strategic Management Journal, 19*(4), 363–375.

Sachs, J. D., & Sachs, L. E. (2021). Business alignment for the "decade of action." *Journal of International Business Policy, 4*(1), 22–27.

Saka-Helmhout, A., & Geppert, M. (2011). Different forms of agency and institutional influences within multinational enterprises. *Management International Review, 51*(5), 567.

Sauermann, H. (2018). Fire in the belly? Employee motives and innovative performance in start-ups versus established firms. *Strategic Entrepreneurship Journal, 12*(4), 423–454.

Scott, W. R. (2001). *Institutions and Organizations* (3rd ed.). SAGE Publications.

Selig, J. P. & Preacher, K. J. (2008). Monte Carlo method for assessing mediation: An interactive tool for creating confidence intervals for indirect effects [Computer Software].

Selig, J. P. & Preacher, K. J. (2010). Monte Carlo method for assessing multilevel mediation: An interactive tool for creating confidence intervals for indirect effects in 1-1-1 multilevel models. [Computer Software]

Sharma, S., & Vredenburg, H. (1998). Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. *Strategic Management Journal, 19*(8), 729–753.

Shinkle, G. A., & Spencer, J. W. (2012). The social construction of global corporate citizenship: Sustainability reports of automotive corporations. *Journal of World Business, 47*(1), 123–133.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological Methodology*, *13*, 290–312.

Tarim, E., Finke, T., & Liu, L. (2021). Energy firms' responses to institutional ambiguity and complexity in long energy transitions: The case of the UK and China. *British Journal of Management, 32*(3), 648–692.

Tashman, P., Marano, V., & Kostova, T. (2019). Walking the walk or talking the talk? Corporate social responsibility decoupling in emerging market multinationals. *Journal of International Business Studies, 50*(2), 153–171.

Taylor, M. S. (2005). Unbundling the pollution haven hypothesis. *Advances in Economic Analysis and Policy*. https://doi.org/10.2202/1538-0637.1408

United Nations (1992). United nations framework convention on climate change. https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf

Van der Zwaan, B., Cameron, L., & Kober, T. (2013). Potential for renewable energy jobs in the Middle East. *Energy Policy*, *60*, 296–304.

Voeten, E., Strezhnev, A., & Bailey, M. (2009). In E. Voeten (Ed.), *United Nations General Assembly Voting Data* (Vol. 27). Harvard Dataverse.

Williamson, O. E. (2000). The new institutional economics: Taking stock, looking ahead. *Journal of Economic Literature, 38*(3), 595–613.

Witte, C. T., Burger, M. J., Ianchovichina, E. I., & Pennings, E. (2017). Dodging bullets: The heterogeneous effect of political violence on greenfield FDI. *Journal of International Business Studies, 48*(7), 862–892.

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