Differential firm commitment to industries supported by social movement organizations [1]

Rodolphe Durand
HEC Paris
1 rue de la Liberation. 78351 Jouy en Josas. France
durand@hec.fr

Panayiotis (Panikos) Georgallis [2]
University of Surrey
Alexander Fleming Rd, Guildford GU2, United Kingdom
p.georgallis@surrey.ac.uk

(June 2017)

Abstract: This article theorizes about and tests the conditions under which firms' commitment to an industry is influenced by social movement organizations (SMOs) that favor the industry. We argue that the more prominent SMOs are within an industry, the more a firm increases its commitment to that industry by expanding its operations; yet, this main effect should be moderated substantially by a firm's idiosyncratic characteristics. The current research predicts that a firm's location, its sensitivity to information about the industry's potential, and its history of associations with activists determine the magnitude of the effect of SMO prominence on its strategic commitment to the industry. We test and find support for these hypotheses using a longitudinal data set of European manufacturers of solar photovoltaic cells between 1990 and 2011. The findings offer new insights for literature on social movements and organizations, as well as strategic management research.

Keywords: Organization and Management Theory, Strategy and Policy, Sustainability/Corporate Environmentalism, Economic Sociology, Nonmarket/Political Environment

[1] The authors are listed in alphabetical order. We are grateful to Brayden King and three anonymous reviewers for their helpful feedback. We also thank Glen Dowell, Eric Brousseau, Bertrant Quelin, Yannis Ioannou, Susan Kayser Daniel Waeger, Georg Wernicke, Thomas Roulet, and Estefania Amer for their feedback on earlier versions of this manuscript. Participants at the Academy of Management 2013 conference, the Strategic Management Society 2016 conference, and the Society and Organizations (SnO) Research Center at HEC Paris provided helpful comments. Finally, we thank Romain Boulogne, Bob Cavents, Elena Fumagali, Cedric Gutierrez Moreno, and Natalie Sophia Pilling for their excellent research assistance. The paper is based on the second author's doctoral dissertation, which received financial support from the SnO Research Center, the GDF Suez –HEC Paris Chair, the HEC Paris Leadership Center, and the Strategy Research Foundation (SRF) Dissertation Grants Program.

[2] Corresponding author.

In 1992, Greenpeace Germany obtained orders for 70,000 alternative refrigerators that do not use greenhouse gasses, encouraging manufacturers to bring this product to market.[3] In the late 1990s, Greenpeace Netherlands collected the names of 15,000 people who were willing to buy solar photovoltaic (PV) modules in its campaign to promote the solar power industry. In Spain, environmental activists have toured the country with a solar-powered caravan to demonstrate that solar electricity works. In 2001, Greenpeace partnered with the European Photovoltaic Industry Association (EPIA) to produce a report that forecast the long-term future of solar energy; this report received a great deal of attention in industry circles and led to additional reports by the two organizations in the years that followed.[4] As these examples illustrate, social movement organizations (SMOs), defined as "organizations which identify their goals with the preferences of a social movement and attempt to implement those goals" (McCarthy and Zald 1977: 1218), can be prominent supporters of industries that they consider more acceptable alternatives to dominant industries. We address two questions that emerge in relation to these scenarios: How does SMOs' prominence within an industry influence firms' strategic commitment, and why do firms differ in their responses to such SMO prominence?

Prior literature on social movements and organizations investigates the support that SMOs provide and their role in industry creation and expansion. For example, SMOs have influenced entrepreneurial activity in the wind power sector (Sine and Lee 2009; Pacheco, York, and Hargrave 2014), the development of the green building industry (York and Lenox 2014), and the creation of markets for local goods (Kurkland and McKaffrey 2016). However, because research in this area mainly focuses on the industry as the primary level of analysis, it has been ill-positioned to address heterogeneity in the strategic choices of firms operating in these industries. This omission is problematic on at least two accounts. First, few studies of industries supported by SMOs have moved beyond entrepreneurial entry rates, leaving firms' subsequent decisions to commit strategically to such industries unexplored. This gap raises the question of whether (some) firms enter industries merely to comply symbolically with social

[3] Source: http://www.greenpeace.org/usa/Global/usa/binaries/2009/4/greenfreeze-in-europe-and-asia.pdf.
[4] Source: Photon International. Murray Cameron, the EPIA's secretary general at the time, later called the 2001 joint report one of the highlights of his stewardship.

expectations, without investing substantively down the road. Second, research that views social movements as a source of market contentiousness, rather than as market supporters, consistently reports that responses to activism differ depending on the firms' characteristics (King 2008; McDonnell and King 2013; Waldron et al. 2013; Weber et al. 2009). Given these observations, although prior work has documented the macro-level effects of support for new industries by SMOs, the need remains to examine whether SMOs affect concrete investment strategies at the firm level and to understand why firms react *differently* to SMO prominence.

We argue that the more SMOs are prominent in an industry (i.e., the more they are noticed within the industry) the more a firm will increase its commitment to the industry. Because SMO prominence signals shifting general public preferences, reflects active sponsoring of the alternative industry's economic potential, and defines new contours for reputation building, firms will tend to expand their commitment to the alternative industry in this case. Yet we also expect that firms differ in their responses to SMO prominence, particularly because their perceptions of the perceived benefits of social movement support might be magnified or stifled according to the firms' location, prior commitments, or history of associations with activists.

Empirically, we focus on the European solar PV (photovoltaics) industry, which has been widely championed by the environmental social movement, "the most comprehensive and influential movement of our times" (Castells 1997: 67). To test our hypotheses, we built a longitudinal data set of solar PV cell producers operating in European countries from 1990 to 2011. We operationalize SMO prominence in reference to Greenpeace's presence in the PV industry's professional media and track all producers' production over time. Using growth models and accounting for country, time, regulation, and other effects, we find results consistent with our predictions. In particular, we uncover a positive effect of SMO prominence on a firm's increased commitment to the solar PV industry. Our results also show that solar PV cell producers that operate in a country with greater local SMO support and that have stronger prior commitments to the industry are more sensitive to SMO prominence (i.e., increase their commitments more). On the contrary, even if SMO prominence reflects overwhelming support for the solar PV

industry, its positive effect on investments gets attenuated among firms that have experienced recent antagonistic relationships with activists.

These findings have important implications for studies of the interaction of social movements and organizations, as well as for strategy research. First, SMO prominence encourages firms' commitment to the industry on average, but some firms react negatively to SMOs' involvement, which limits their subsequent commitment. Thus, the findings of this study add an important refinement to knowledge of the relationship between firms and SMOs. By focusing on firm-level strategies instead of industry-level outcomes (Sine and Lee 2009; Hiatt et al. 2009; York and Lenox 2014; Pacheco et al. 2014), we complement past research and help explain how SMO prominence can enlarge heterogeneity within an organizational field. Second, our measure of how much firms commit to the solar PV industry suggests that SMO prominence prompts firms to act in ways that go beyond symbolic adherence to movement expectations or impression management (Fiss and Zajac 2006; McDonnel and King 2013). The resulting increases in investments appear substantive; a one standard deviation in SMO prominence leads to a yearly increase in commitment by 22% over a firm's average production during this period. Third, this average effect differs substantially and may reverse, depending on the firm's characteristics, so our results contribute to strategic management research by showing that within-industry variation in investment strategies stems from the conjunction of SMO prominence at the industry level and idiosyncratic organizational attributes at the firm level.

SOCIAL MOVEMENTS, FIRMS, AND INDUSTRY CREATION

Two streams of literature serve as points of departure for this study. The first investigates the impact of activists and SMOs on firms, either directly or indirectly. Studies in this area examine the effects of shareholder activism, boycotts, lawsuits, protests, and threats of government regulation (Bartley and Child 2011; Davis and Thompson 1994; King and Soule 2007; Reid and Toffel 2009; Walker et al. 2008; Yue et al. 2013; Aranda and Simons, 2017) and show that, despite their relative lack of resources and formal control over firms, and without necessarily seeking the state as a mediator (King, 2008), social movements often can effectively trigger organizational change. These studies mostly investigate cases in

which activists target firms to drive them away from contested corporate practices. Firms then respond to these appeals in an effort to avoid increasing operating costs, negative media coverage, or reputation damage. Yet these effects are contingent on organizational characteristics, such that some firms respond differently than others (King 2008; Hiatt, Grandy, and Lee 2015; Waldron, Navis, and Fisher 2013).

A second stream of research takes a perspective in which SMOs are not necessarily contentious. Rather, SMOs can influence the emergence of new industries and help create market spaces for business practices with greater social value than existing technologies. Studies on the grass-fed meat and dairy market (Weber et al. 2008), the wind energy sector (Sine and Lee, 2009; Pacheco et al. 2014), the forestry industry (Zietsma and Lawrence 2010), or sustainable tourism (Van Wijk et al., 2013) describe mechanisms by which SMOs operate as institutional entrepreneurs and how they form alternative industry practices and frames to promote them. These studies, focusing at the industry or field level of analysis, have offered complementary evidence to suggest that SMOs can foster the creation of new markets by shaping the boundaries around experimental spaces that 'protect' alternative industry practices.

Moreover, SMOs can be influential in shaping public attention (Andrews and Caren 2010; Vasi and King 2012), because they are "actively engaged in a social constructionist process as framing agents" (Snow and Benford 2009: 38) in their efforts to influence public discourse and sentiments. Framing refers to "the signifying work or meaning construction engaged in by movement adherents … relevant to the interests of movements" (Snow 2006: 1780). By using framing techniques, SMOs diagnose and highlight the problems associated with disputed business practices (Hiatt et al. 2009; Weber et al. 2009; Berrone et al. 2016), as well as promulgate solutions that materialize as alternative technologies in line with the activists' values and identities (Sine and Lee 2009; Vasi 2011; Weber et al. 2008). Activists and SMOs frame these solutions as "necessary, valid and appropriate" (Rao 1998: 912), which contributes to the legitimation of these practices and to greater confidence in their potential.

For example, in the European solar PV industry, environmental SMOs sponsored a series of actions, as illustrated in the opening of this paper and in Table 1. Environmental SMOs promote energy-saving or non-depleting technologies and legitimize these technologies by mobilizing advocate coalitions

(Jacobsson and Lauber 2006), engaging consultants to write impact reports, coordinating policy papers (Koopmans 1999), educating the public (Hiatt et al. 2009; Sine and Lee 2009), linking consumers to producers (Weber et al. 2008), and articulating the technologies' benefits in the mass media. Such actions increase acceptance of the industry and confer legitimacy on industry participants (David et al., 2013).

--- Insert Table 1 about here ---

However, despite the significant body of research on markets supported by movements, most work in this area has relied on the industry level, preventing in-depth insights into how SMOs' support for new markets variously affects the strategic commitment of producers that serve those markets (Pacheco and Dean 2015). In this paper, we define SMO prominence as the attention given by the industry to an SMO and accordingly investigate whether an increase in SMO prominence leads producers to increase their commitment to the industry. By commitment, we refer to concrete investments in production, not symbolic claims or mere presence in an industry. Just as prominent firms draw more attention and reactions from stakeholders (Mishina et al 2010), prominent SMOs should prompt stronger reactions from firms. In terms of the nature of these reactions, SMO prominence could imply heightened politicization of an industry, which may reduce firms' investments (Ingram, Yue, and Rao 2010) and lead them to decouple their actions (Crilly, Zollo and Hansen 2012), such that they make only superficial investments in socially desirable industries (Philippe and Durand 2011). But several other reasons suggest that SMO prominence may enhance firm commitment to the supported industry on average.

First, greater SMO prominence implies that the alternative technologies promoted by the SMOs offer industry solutions that are consistent with public preferences, which entices firms to increase their commitment in anticipation of favorable consumption trends in the more broadly supported industry (York and Lenox 2014). Second, the prominence of SMOs suggests that the favorable cues they provide are more meaningful and accepted, enabling and justifying investments in these activities. That is, SMOs' optimistic framing is more likely to reach producers, thereby offering evidence to justify firms' investments in the industry to shareholders or other stakeholders that may doubt their value (Weber and Soderstrom 2011). Third, SMO prominence indicates that links and associations with activists get taken

into account by industry, resulting in potential reputational benefits from investing in it (Philippe and Durand 2011). As SMOs become prominent, firms are motivated to invest in the alternative practices and show that they not only understand the concerns of social movements but also help remedy them. As we discuss subsequently, these three drivers suggest different implications for different firms, but they all point in the same direction: *Ceteris paribus*, SMO prominence relates positively to a firm's propensity to increase its commitment to the industry sponsored by that SMO.

> ***H1****: The more prominent an SMO is within an industry it supports, the more producers increase their commitment to this industry.*

This baseline hypothesis establishes a main relationship, based on three mechanisms: sponsorship aligned with local preferences, diffusion of positive information cues about the industry's potential, and reputational benefits. Each producer is more or less likely to be responsive to each of these mechanisms, depending on its characteristics. Notably, a firm's location, its sensitivity to informational cues about the industry, and its history of associations with activists likely influence its reflection of SMO prominence as a positive or negative signal and thus its decision to commit substantial resources to the industry.

For example, though many issues addressed by social movements transcend national boundaries, substantial differences exist across nations in their support for each movement (Koopmans 2009; Marks and McAdam 2009). In the case of the environment movement, these cross-national differences are so striking that they led Rootes (2007: 632) to argue that speaking about "the" global environmental movement is "a triumph of abstraction or of aspiration over experience." Therefore, firm location should strongly influence whether the main effect expressed by H1 can be amplified. If a firm is located in a country where SMOs garner strong support, it should be more inclined to consider SMO prominence as an indication of local public preferences and adjust its investments accordingly. Firms often consider SMO support as a signal of social preferences for new sectors—such as organic food, non-fossil energy, or fair trade coffee—that indicates potential demand for new production practices (Hiatt et al. 2009; Vasi 2009; Reinecke and Ansari 2013). One industry expert we interviewed suggested that environmental organizations "reflect the concerns of the citizens and consumers" and that companies integrate these

concerns into their strategies. Location in a country where SMO support is high also provides the firm with 'social proof' (Rao et al 2001) that local social preferences are aligned with the SMO and that the SMO can mobilize further resources for sustained campaigns that support the industry in a given area (Zietsma and Lawrence 2010; Vasi and King 2014). As such, a firm will be more likely to view SMO prominence positively when it is located in a country where the SMO receives stronger local support, which should result in its greater commitment to the industry.

> ***H2****: The effect of SMO prominence on increased firm commitment is more pronounced if the firm is located in a country with more support for the focal social movement organization.*

Beyond supplying signals of social preferences, SMO prominence also offers justification for firms' investments. For example, in discussing the evolution of the German solar cell industry, Jacobsson and colleagues (2004: 23) stress the key role of SMOs that "articulate underlying values in favor of solar cells, and other renewable energy technology, and legitimate the new technology." By accentuating and highlighting certain issues over others (Snow 2006), SMOs modify the cues available to decision makers and alter perceptions of industry opportunities (Hoffman and Ocasio 2001). That is, SMOs tend to be selective in their discourse and employ optimistic rhetoric (Gamson and Meyer 1996) about the economic potential of new technologies, such as praising "green champions" while ignoring or condemning "brown" firms. They also prefer to publicize forecasts that paint a rosy picture of their favored industries' potential (see Table 1 for an example).

However, not all firms are equally responsive to external stakeholders' discourse or likely to accept it as a credible representation of the industry's potential (Rao et al. 2001; Schifeling 2013; Durand and Jacqueminet 2015). Rather, the informational cues propagated by activists differentially affect firms, depending on the stance they have adopted toward the industry in the past. Evidence from psychology and behavioral economics suggests that individuals and organizations rely excessively on signals that confirm their beliefs, expectations, or current reference points (Nickerson 1998; Tversky and Kahneman 1974; McNamara and Bromiley 1997; Durand 2003; Elfenbeit and Knott 2015). A firm that already has engaged in substantial investments in the new industry thus may be more sensitive to SMO prominence than a

rival that has not made any such investments. Compared with competitors with fewer stakes in the industry, firms with larger prior commitments to solar PV should rely more on signals that support the industry's potential, reinforcing the effect of SMO prominence on their production investments. The SMO's prominence and associated cues about the industry's potential confirm the firm's choices and encourage its pursuit of continued investment (for evidence of such a confirmation effect in a high-tech market, see Henderson and Stern, 2004; for an example of optimistic cues in the solar PV context, see Table 1). Within organizations, greater SMO prominence reinforces managers' attention toward the industry, which may lead to new investments in production (Delmas and Toffel 2008; Ocasio 1997; 2011; Georgallis 2017). A firm's sensitivity to cues about an alternative industry's economic potential propagated by SMOs is reflected by the firm's prior engagements in favor of the industry and likely reinforces the main effect of SMO prominence on further commitment to the industry.

> ***H3:*** *The effect of SMO prominence on a firm's increased commitment is more pronounced as the firm's past commitments make it more sensitive to the industry's potential.*

Finally, its relationship with activists may shape a firm's likelihood of increasing its commitment as a function of SMO prominence. Firms sometimes increase their commitment to industries supported by SMOs to reap the reputational benefits represented by the values that SMOs promote (McDonnel and King 2013; Philippe and Durand 2011). As one solar PV professional admitted, "If publicly there is a way you can take advantage of your commitment, then your commitment will be bigger." However, not all firms are equally able to enjoy these reputational benefits; it may depend on the history of the firm's relationship with activists (Barnett 2007; King and McDonnell 2012; Kayser 2017). A firm's prior relationship with SMOs influences the outcome of its investments, because this relationship can alter the SMOs' reactions to the firm's decisions (McDonnel, King and Soule 2016). In particular, we expect that SMOs will pay positive attention to investments in alternative technologies by firms with prior constructive relationships with the social movement, but they might closely scrutinize firms that have been denounced in the past for violating relevant social norms. For firms with contentious relationships with SMOs, taking advantage of their commitments to alternative technologies is more difficult, because

it could lead to a backlash of negative reactions (cf. Barnett, 2007; Luo, Meier and Oberholzer-Gee 2012). The lack of congruency between a firm's current and past actions in particular can leave activists skeptical about the firm's investments. For example, British Petroleum (BP) invested hundreds of millions in solar energy and tried to rebrand itself with its "Beyond Petroleum" campaign. However, this campaign resulted in increased scrutiny and even more frequent targeting by activists who distrusted BP's sincere willingness to turn itself into a green company; in turn, BP slowly reduced its commitment to solar PV and eventually divested from the industry. Similarly, HSBC's pioneering decision to become the first large "carbon neutral" bank was met with suspicion and criticism by environmental activists, leading the company withdraw from a commitment made "with much fanfare" (Bowen, 2014: 2).

More generally, companies frequently attacked by a social movement develop a tainted image that prompts accusations of greenwashing or duplicity (Lyon and Montogomery 2015), which may make them wary of activists' prominence in the industry (Carlos and Lewis 2017). The involvement of SMOs in the industry increases these firms' risk of being scrutinized, which lowers their motivation to invest more because they cannot reap the reputational benefits of such investments (Barnett, 2007). Indeed, publicly communicating their investments carries greater risk for these firms, compared with firms that have good or neutral relationships with activists. Thus, the main effect of SMO prominence on a firm's commitment to an industry is likely moderated by the prior relationship between the focal firm and the social movement: SMO prominence will shape firms' risk assessments and result in lower subsequent commitments when the firms have been targeted more by the social movement in the past. Formally:

> ***H4****: The effect of SMO prominence on a firm's increased commitment is less pronounced for firms that have historically adversarial relationships with the focal social movement.*

SETTING, DATA, AND VARIABLES

We test these predictions in the European solar PV production industry by using a unique data set of solar cell producers operating in European Union (EU) countries during the 1990–2011 period. Several criteria guided our choice of setting. First, the solar PV industry has grown into a very important sector of

economic activity. In 2011, this US$80 billion industry[5] became the first renewable technology to surpass conventional energy technologies in terms of newly installed capacity in the EU.[6] Second, it is important that the focal industry be of interest to a social movement. Anecdotal evidence reveals that environmental SMOs have championed solar energy and promoted PV technology, despite cost disadvantages, for many years (Jacobsson et al. 2004; Jacobsson and Lauber 2006). The socio-environmental benefits linked to the use of solar energy (EPIA 2008; EPIA and Greenpeace 2001; Flamos et al. 2009) make solar PV one of the most favored industries by environmental activists. Third, SMOs' activities must attract the attention of industry participants, which can be captured through the specialized business press devoted to this industry. For example, many industry publications cite environmental organizations—not to report their confrontational activities but to discuss tactics for promoting the PV industry. Thus, the European solar PV cells industry provides an appropriate setting to test our hypotheses.

Data

We drew our population of firms from *PV News*, the world's oldest solar PV industry newsletter and, according to industry experts, a highly reliable source of information on solar cell production activity worldwide that offers the longest coverage available (Kapoor and Furr 2015). Data availability encouraged us to focus on solar cell producers: One of the most capital-intensive stages in the solar PV value chain, solar cell production is a multibillion dollar sector. Although relatively few firms were active in the field, this setting provides the benefit of reducing the chances that firms enter the industry for merely symbolic reasons. The upstream part of the PV value chain is characterized by very high Minimum Efficiency Scales and thus high costs of operating solar PV cell production facilities, which offers two benefits: First, these circumstances offer a conservative test of our hypotheses (i.e., we test whether an SMO is able to influence the growth of companies in a setting where the stakes are high). Second, it can separate out the effect of the movement from the effect of the firms, which would not be

[5] See www.pvgroup.org/sites/pvgroup.org/files/docs/SEMI-PVGrp_WhPpr_MnfctrngSlrPV.pdf.

[6] Based on data presented at the Intersolar 2012 Conference by the EPIA.

entirely possible in downstream parts of the value chain (e.g. solar power generation) where environmentalists may also be firm founders because of the relatively low barriers to entry.

Although *PV News* started to issue annual lists of solar cell producers before 1990, we used this year as the beginning of our observation period because environmental organizations started actively promoting the industry around 1990. We sampled firms that operated between 1990 and 2011 in the EU (in particular, the 12 countries that were EU members from the beginning of our observation period) to ensure homogeneity in the transnational environment while retaining cross-country differences in SMO support (as discussed subsequently). Eight of these countries (Belgium, Denmark, France, Germany, Italy, Netherlands, Spain, and the United Kingdom) had solar PV cell producers reported in *PV News*' annual lists of solar cell manufacturers. Our dataset includes all producers reported by PV News as operating in these countries. The number of solar PV ventures per country ranges in our sample from 1 (Denmark) to 24 (Germany), with an average of 6.4 and a median of 3.5 producers per country. The final data set is an unbalanced panel of 315 observations, corresponding to 51 firm–country dyads that remained in the sample for an average of 6.17 years and operated in 8 countries during the observation period.

Dependent variable: production expansion

To proxy for increased firm commitment, we first coded firms' annual production of solar PV cells in megawatts (MW) in each country, as listed in the *PV News* archive. To verify the reliability of this production information, we consulted industry professionals and interviewed the current and former (founding) editor of *PV News*. We also cross-checked the data against a survey by another industry journal, *Photon International*, for a randomly chosen year (2001). Virtually all firms' reported production figures were similar in both industry magazines. We used a growth model to estimate increased firm commitment to solar PV. Per this approach, the dependent variable is a firm's production in country *c* and year *t* expressed in MW. Note that a lagged dependent variable (i.e., firm's production in country *c* and year $t - 1$) is included in the regressors; other model characteristics are outlined in the next section.

Independent variables

Following interviews with industry insiders and reviews of archival material, we chose to study

Greenpeace as the SMO of interest. Despite being widely depicted as a radical activist group, Greenpeace employs a wide range of tactics to promote alternative industries as solutions to environmental problems. It has maintained steady, comparatively high membership rates in Europe for the past two decades and remains the most prominent supporter of solar energy among Europe's nongovernmental organizations (NGOs). The organization has set the transformation of the energy field—or the "Energy [R]evolution" (Greenpeace 2014)—as one of its top priorities. In 1994, Greenpeace began a dedicated solar energy campaign, followed by many subsequent campaigns to promote solar energy that involved leafleting, conference presentations, scientific reports, radio broadcasting, and even installations of PV panels (see Table 1 for illustrations). In addition, Greenpeace receives attention from the industry itself and, to foreshadow our results, in a consequential manner.

We rely on industry press coverage to capture SMO prominence (focusing on Greenpeace), because these sources offer specialized coverage of the industry and act as historical records that simultaneously structure and reflect the attention of their readers (Hoffman, 1999; Hoffman and Ocasio, 2001). We use all monthly issues of *PV News* that were available from the beginning of our observation period, complemented with the full archive of *Photon International*. These sources constitute the two most comprehensive solar PV industry trade journals (Kapoor and Furr 2015). The attention that Greenpeace received from the industry press varied over our period of observation, signaling distinct levels of prominence attributed to this SMO within the solar PV industry. The proportion of issues mentioning an actor serves as a good proxy for the prominence of this actor, by reflecting industry-level attention, or the selective focus of attention that industry participants pay to a particular actor, situation, or event (Hoffman and Ocasio, 2001). Our first independent variable, *Greenpeace prominence*, is the number of publication issues in each year that mention Greenpeace, divided by the total number of issues published that year.

Our second hypothesis requires a proxy for the strength of environmental movement support in a given country. For this variable, we followed prior research, which relies on patterns of membership in prominent environmental organizations (Hiatt *et al.* 2009; Lee and Sine 2007; Sine and Lee 2009;

Schneiberg, King and Smith 2008), and used cross-country data on Greenpeace members from three sources to construct our measure. One of the authors gained access to the Greenpeace International archive of the International Institute of Social History, located in Amsterdam, where he gathered and coded information about the number of paying Greenpeace members across countries and years. These data were incomplete, so we combined them with data on Greenpeace supporters that were published in a study of the ratification of the Kyoto protocol (Von Stein 2008). Because the exact sources cited in this study could not be traced, we were cautious about the reliability of this data set and therefore compared the data for the countries and years for which information was available from both sources; this correlation exceeded 99%. We combined these sources with data from annual reports issued by Greenpeace national branches to construct the variable *Greenpeace local support*, proxied by the number of paying Greenpeace members in a country per year. A few values were still missing after this procedure, which we imputed using linear interpolation (Sine and Lee 2009; York and Lenox 2014).

According to our third hypothesis, one mechanism by which SMO prominence affects firms is its reflection of activists' ability to disseminate positive cues about the industry as a viable investment opportunity. These cues are more convincing, and firms are more likely to notice, when the producer has already made substantial investments in the industry. We used three different variables to test whether firms' prior investment behavior makes them more or less sensitive to SMO prominence. First, we captured a firm's *past commitment* relative to competitors, by taking its share of production over total European PV production for that year (reported by *PV News*). Second, we used a firm's prior production as a proxy for its *absolute commitment* to the industry. Third, we created a variable that accounts for firms' *cumulative commitments* over time (for all years since the firm's entry in PV), with a decay factor to acknowledge the greater importance of more recent investments. To test H3, we created an interaction for each of these three variables with *Greenpeace prominence*. Because the magnitude of production share is easier to interpret, we report the results using this first variable, but the hypothesized effect is consistent across all three operationalizations.

Finally, to test our fourth hypothesis, we need to gauge the differences in firms' relationships

with environmental activists and NGOs. We gathered data from media reports using the LexisNexis Academic Database. Following prior literature (e.g. Lenox and Eesley 2009; King 2008; Vasi and King 2012), we coded the number of instances in which firms appear to be targeted by environmental activists or groups through protests, boycotts, demonstrations, or lawsuits (the search string and details of the coding procedure are included in the Appendix A, together with a description of the procedure we used to eliminate false positives). Because a pilot study revealed that including only English-language news items severely limited the resulting articles, we hired research assistants to translate the keywords and repeat the searches in other languages. The overall search thus included six languages: English, Spanish, French, German, Dutch, and Italian. Our final measure of the variable *Adversarial relationship* at time *t* is the number of articles that indicate an adversarial relationship between the focal firm and environmental groups over the previous three years [*t – 3, t – 1*]. Because the variable was highly skewed, we transformed it to its natural logarithm (after adding 1); the transformed variable is included in the models. We created an interaction for this variable with *Greenpeace prominence* to test the last hypothesis.

Control variables

Our model also includes several producer characteristics, country-level variables, and market characteristics. As discussed previously, because we use a growth model (cf. Stuart, 2000) to estimate increased commitment to the industry, a lagged dependent variable is included as past production in the focal country affects future production. We also control for producers' *Tenure in the industry*, measured as the cumulative number of years that the firm has actively produced solar PV cells in each country, which may influence its propensity or ability to expand. To account for potential competitive effects or expansion bandwagons, which have been shown to affect firm responses to social movements (Briscoe, Gupta, and Anner, 2015; Pacheco and Dean 2015), we control for total *Rivals' expansion* in the same country. In models that include the *Adversarial relationship* variable, we control for the total number (logged) of media reports mentioning the firm during the same period, after excluding those that imply an adversarial relationship (so that they are not double-counted). We also add the variable *Foreign firm* to gauge the propensity of producers to grow more or less when operating outside of their headquartered

country (which could also be correlated with their sensitivity to local SMOs).

In terms of country characteristics, we control for *Electricity prices*, because demand for renewables tends to be greater when electricity prices are higher, and environmental movement activists may find it easier to promote renewable energy in these countries. Data on each country's electricity prices were collected from Eurostat and the International Energy Agency. Moreover, public policies likely shape firms' commitment to an industry. The most influential and widely used mechanism to promote solar PV in Europe has been the feed-in-tariff (FiT) scheme (Flamos *et al.* 2009; Hoppmann et al. 2013; Jacobsson and Lauber 2006), whereby governments promise to purchase electricity produced through renewable energy at a premium rate, or tariff, for a set number of years. *Feed-in-tariff* is the average tariff duration offered by each country's FiT scheme in each year, and accounts for the effect of the policy environment (Georgallis and Durand 2017); using the tariff price, we obtained virtually identical results. In addition, our model includes country fixed effects, which control for unobserved differences between countries that are not captured by these variables.

Industry growth can exert a positive impact on commitment (Gilbert and Lieberman 1987; Henderson and Cool 2003) and also provide a framing tool that helps social movements draw attention to solar PV as a viable opportunity. Following prior research (Henderson and Cool 2003; Pacheco-de-Almeida et al. 2008), we use the four-year historical compound annual rate of production growth (CAGR) in the EU as a proxy for *Industry growth.* Greater uncertainty about the industry's growth could deter companies' expansion plans, so we created a *Growth uncertainty* variable, using the standard deviation of the four-year CAGR in industry growth.

MODELS AND RESULTS

To test the hypotheses, we use a growth model with production as the dependent variable and a lagged dependent variable included to account for firms' prior production. The nature of our data further guided our econometric specification. The results of a Breusch-Pagan/Cook-Weisberg test rejected the null hypothesis of constant variance ($p < .01$), indicating the presence of heteroskedasticity, and the

Wooldridge test for autocorrelation in panel data suggested the presence of serial correlation ($p < .05$). Because we have repeat observations of the same entity across multiple years, residuals are likely correlated across these two dimensions. We thus employ an extension of the ordinary least squares (OLS) model (Thompson 2011) that provides standard errors that are robust to autocorrelated (1) within-panel disturbances – i.e., clustering on entity and (2) across-panel disturbances – i.e., clustering on time, combined with traditional heteroskedasticity-robust standard errors. This model thus accounts for simultaneous variation across time and firms; Thompson (2011) advocates it as particularly appropriate for small samples and when regressors include significant time and firm components, such as in our case. To ensure that Greenpeace prominence and firm growth are not two separately co-occurring phenomena, we also add period effects to reflect changes in EU leadership.[7] Finally, we include country fixed effects (for countries with more than one producer—that is, all of them but Denmark) to account for unobserved country differences that could drive firms' commitment to the industry, such as the mere size of the country. Because temporal precedence is a primary requirement for testing causality, we measure our dependent variable one year after the predictor variables.

Table 2 contains the descriptive statistics for all variables. Some variable pairs exhibit relatively high absolute correlations, so we standardize the continuous predictor variables before running the models to remove nonessential collinearity (Aiken and West 1991; Dalal and Zickar 2012). Further, variance inflation factor analyses confirmed that multicollinearity does not pose a threat the study's conclusions.

--- Insert Tables 2 & 3 about here ---

Table 3 contains the results of the growth model. In Model 1, we regress *production* on the control variables. As expected, prior commitment is a very strong predictor of current commitment, according to the significant and positive coefficient of lagged production. Accounting for prior commitment, electricity prices are a strong predictor of a firm's expansion of solar PV production. That

[7] We created (four) dummy variables that capture the timing of (three) changes in the presidency of the European Commission. In unreported tests, we experimented with other ways to account for macroscopic changes over time, such as using a linear time trend variable or including period effects that reflected EU directives for the promotion of electricity. The results remained consistent across all these analyses.

is, in countries with high electricity prices, solar producers tend to increase their production more, viewing solar PV production as a growth opportunity. Foreign producers tend to expand less compared to local producers, as indicated by the marginally significant coefficient of *Foreign firm*. Surprisingly, our proxy for the regulatory environment, *Feed-in-tariff*, does not conform to our predictions, in that its coefficient is far from significant and even is negative in some models. We suspected that the effect of FiTs could be absorbed by the period dummies or the variables that capture industry growth and uncertainty, which depend strongly on the policy conditions (Georgallis and Durand 2017).[8] Indeed, in additional tests, we find that the FiT coefficient is positive and significant when we exclude these variables. Finally, the coefficient of industry uncertainty is negative and significant, as expected.

When we add *Greenpeace prominence* in Model 2, its coefficient is positive and significant, in support of H1. Greater prominence of Greenpeace in the industry is associated with solar PV manufacturers' greater production increases. Based on Model 2, we can calculate the substantial influence of this effect, which has a range of approximately 21.5 MW from the lowest (when industry press did not report any Greenpeace actions) to the highest (when half the industry press issues mentioned Greenpeace) values of this variable. To put this in perspective, consider that mean production in our sample over the whole period was approximately 36 MW. Another way to gauge the size of this effect is to note that a one standard deviation increase in Greenpeace prominence leads to an approximately 8 MW increase in production, or a 22% increase [$100 \times (36 + 8)/36 - 100$] over the baseline for the average producer during this period.

We also have postulated that the impact of this effect would be stronger for firms located in countries with stronger support for the environmental movement. We add *Greenpeace local support* and its interaction with the main effect in Model 3. The coefficient of the interaction is significant, in support of H2. Based on Model 3, we see that a one standard deviation increase in Greenpeace local support increases, on average and *ceteris paribus*, the effect of Greenpeace prominence by 3.6 MW, or

[8] This could explain why other studies of renewable energy industries find similar results (Pacheco and Dean, 2015), especially in the presence of regional fixed effects (Aguirre and Ibikunle, 2014).

approximately 51% [100 × (7.1 + 3.6)/7.1 – 100] over the effect of Greenpeace prominence when Greenpeace local support is at its mean.

For H3, we examine whether our main effect varies depending on the past commitment of the producer in the industry. We add the interaction of *Greenpeace prominence* with past commitment in Model 4. The interaction coefficient is positive and significant, consistent with H3. Again, we can gauge the economic significance of the effect: a one standard deviation increase in past commitment increases, on average and *ceteris paribus*, the effect of Greenpeace prominence by 5.4 MW, or approximately 73% [100 × (7.3 + 5.4)/7.3 – 100] over the effect of Greenpeace prominence when past commitment is at its mean.

To test H4, we include the variable *Adversarial relationship* and its interaction with *Greenpeace prominence* in Model 5. This variable captures the number of articles that indicate an adversarial relationship between the firm and environmental activists over the previous three years. We thus add another control for the total number of articles that mention the firm over the same period (minus those that indicate an adversarial relationship, to avoid double-counting). As Model 5 shows, the effect of *Greenpeace prominence* on firms' expansion is lower for firms that have been targeted more in recent years, compared with those that were not frequent targets of activism, as indicated by the negative, significant interaction term in Model 5. A one standard deviation increase in this variable decreases, on average and *ceteris paribus*, the effect of Greenpeace prominence by 1.8 MW, or approximately 22% [100 × (8.3 - 1.8)/8.3 – 100], compared with the effect of Greenpeace prominence when the adversarial relationship variable is at its mean.

Model 6 presents all hypothesized effects together, thereby further corroborating these conclusions. Figure B1 in Appendix B depicts the impact of the main effect on PV production expansion for different values of *Greenpeace local support* and graphically confirms H2. Figure B2 reveals the impact of *Greenpeace prominence* on PV production expansion for different values of past commitments; the slope is steeper when the firm has committed more to the industry. As Figure B3 shows, the effect of

Greenpeace prominence is significant and has a downward slope for all values of the *Adversarial relationship* variable around the mean. In unreported analyses, we find that the effect becomes insignificant (confidence interval includes 0) only for very high values of this variable, which are marginally within the range of our data.

All together, the additional predicted effect of a situation in which all moderating variables favor expansion (values at mean + 1 SD for both *Greenpeace local support* and *Past commitments*, and at mean – 1 SD for *Adversarial relationship*) is +19.4 MW (a substantial increase, considering that the average production in our period of observation was 36 MW). A situation with unfavorable conditions instead is associated with a production decrease of approximately 5.2 MW (see Table 4).

--- Insert Tables 4 and 5 about here ---

Robustness tests

We ran further tests (see Table 5) to establish the validity of the results and affirm that the moderators for which we found evidence appropriately capture the theoretical mechanisms.

First, with regard to H2, local support for Greenpeace could be confounded empirically with the characteristics of a citizenry that holds pro-environmental values. Thus, a valid concern is that firms' choices may be driven by unobserved underlying values, which also increase membership in SMOs. Therefore, we attempt to determine whether H2 can be attributed to SMO support or if it merely represents an outcome of the underlying norms or values that prevail in a specific country. Using data from the World Bank Database and the Comparative Political Dataset (Armingeon et al. 2013), we regressed Greenpeace membership at the country level on several known predictors of environmental values.[9] Then, we included the result (*prediction*) and the *residual* from this regression, in lieu of

[9] Building on prior research (Curtis et al. 1992, 2001; Dalton 2005; Dekker and Van den Broek 1998; Fransson and Garling 1999; Franzen and Meyer 2010; Nesbit and Gazley 2012; Samdahl and Robertson 1989; Van Liere and Dunlap 1980), we used the following predictors: country population, degree of urbanization, GDP per capita adjusted for purchasing power parity (proxy for affluence), the country's unemployment rate, the percentage of women in the labor force, the percentage of people enrolled in tertiary education, the country's per capita CO_2 emissions (inverse proxy for environmental quality), the percentage of people with access to the Internet (to tap access to information about global environmental problems), and the seats of parties to the center and left as a

Greenpeace local support, in Model 6. The result (*prediction*) should capture the extent to which Greenpeace support is a reflection of the underlying values of the citizenry, and the residual reflects the "portion" of Greenpeace membership that is unexplained by public sentiment. Thus, the effect of the residual on firm commitment accounts for SMO impact over and above the unobserved environmental values of the citizenry. Model 7 suggests that the interaction discussed in H2 is slightly subdued but remains significant when we take into account the underlying values of the citizenry. The *prediction* of the regression on Greenpeace membership has a positive but not significant interaction, while the *residual* has a positive and significant interaction. This means that the SMO has an effect over and above the role of values. These results are consistent with the idea that, while public values are strong predictors of membership, the presence of SMO members that give voice to those values is a stronger signal for industry players, as it indicates the capacity of the movement to garner support for the industry and affect the behavior of firms in the focal country (cf. the disproportional influence of activist constituents on their political environment; Kassinis and Vafeas, 2006). Finally, the positive interaction between *Greenpeace prominence* and the residual of Greenpeace membership suggests that the much studied effect of SMO local support has a stronger influence on firms when the SMO is prominent within the industry.

Second, we assessed the plausibility of our theory for the second mechanism. In particular, to probe the second mechanism—that firms are differentially affected by SMO prominence depending on their sensitivity to positive cues about the industry—we applied another empirical strategy, this time at a higher level of analysis. The perceived attractiveness of the industry, which affects the firm's sensitivity to SMO cues, may depend not only on the stakes that a firm has in the industry due to its past commitment, but also on perceived "industry opportunity structures" (Schurman 2004; Soule 2009) in the country. When symbolic claims (SMOs' rhetoric) are reinforced by material evidence (economic opportunities), those claims are more likely to be seen as true. Prior work has suggested that increases in electricity prices function as evidence of economic opportunities, such that they offer "institutional

---

percentage of total cabinet posts (proxy for the political orientation of the citizenry). The regression yielded an adjusted R-square of .604 (details available on request).

entrepreneurs, such as environmental groups, … opportunities to promote new technological agendas" (see Sine & Lee, 2009: 126; also see "avoided costs" in Sine, Haveman, and Tolbert, 2005: 218). Therefore, we proxy for the industry's attractiveness at the country level by using changes in electricity prices (yearly changes in cents per KWh). We then interact this variable with *Greenpeace prominence*, with the expectation that SMO prominence would have a stronger effect for firms located in countries with greater electricity price increases. The results (Model 8) are consistent with this prediction, in further support of the mechanism driving H3. In a similar vein, we tried to infer this mechanism by interacting *Greenpeace prominence* with perceived economic opportunities at the industry level, by interacting it with one of our control variables that could indicate favorable industry opportunities, *Industry growth*; again, we find supportive evidence (Model 9). Considered together with the main tests for H3, this evidence further corroborates the proposed theoretical mechanism.

Third, two characteristics of the *Adversarial relationship* variable led us to conduct further tests to examine the robustness of the reported effect. First, more than two-thirds of the firms in our sample were never targeted by environmental activists, so most of the variation in this variable was driven by the relatively small number of firms with non-zero values. We thus rerun the test with a simpler variable: a dummy variable that takes a value of 1 if the firm was targeted at least once in the previous three years, and 0 otherwise. Consistent with our previous results, the interaction of this dummy variable with *Greenpeace prominence* is negative and significant (Model 10). Second, firms that had been the targets of activists were almost exclusively de alio entrants, firms that diversified into solar PV from other industries (only one de novo entrant received negative media mentions). Therefore, we reestimated the model, this time using a subsample of only de alio firms. Despite the considerable reduction in sample size, the results for the interaction effect point to the same conclusions (Model 11). We also considered the possibility that this last moderating variable could be endogenous and estimated instrumental variable (IV) models to address this concern. When using IV models we find no differences in the hypothesized effect; what is more, our post-estimation tests suggested that our measure of activist scrutiny is not endogenous to PV firms' expansion, so we do not report these results. Overall, we find strong evidence

that the impact of *Greenpeace prominence* is less pronounced for firms that have an adversarial relationship with activists.

Additional robustness tests are presented in Appendix B. Because of the sample size, we were concerned if outliers could exert excessive influence on the results and drive our conclusions. To ensure no such influence, we excluded observations for which the dependent variable had values greater (lower) than the mean, plus (minus) 3.5 standard deviations. We then reestimated the full set of models with the remaining observations and found that the results were virtually unchanged (Appendix B: Model 12).

To ensure that our results are not sensitive to the assumptions of the estimator, in additional robustness tests we estimated production with two different models. We first fit a generalized estimating equation (GEE) model to the data set. This population average method, which is appropriate for data in which repeated measures are correlated within-subjects (Ballinger 2004), allows for non-normally distributed dependent variables and indirectly accounts for firm-level factors that might affect the dependent variable but are not included as controls. Analyzing our data using GEE with a first-order autoregressive correlation structure pointed to similar conclusions (Model 13). All hypothesized effects were significant, except the last interaction term (conditioning the main effect on firms' historical relationship with activists), which was qualitatively similar but fell short of significance. However, visual inspection of the marginal effects showed that it is significant at values of *Adversarial relationship* close to the mean and insignificant at high values (i.e., for firms that are the most frequent targets of activism), a result consistent with the main results from Table 3.

In another set of tests, we estimated production using a model in which, instead of clustering at the producer level, we include fixed effects for all producers that were in the industry for at least 7 years [i.e., firms with above-average presence in our sample (the average was 6.2)]. Because these models include producer instead of country fixed effects, we exclude the variable *Foreign firm*, which is stable across each producer, and add new controls to account for relatively stable cross-country differences: the country's size (population), economic conditions (GDP per capita adjusted for purchasing power parity),

and structure of the energy industry (concentration of the conventional energy sector). The analyses produced no substantive differences in the hypothesized effects (Model 14).[10]

Overall, the reported results are consistent across a variety of specifications that account for the presence of outliers, alternative ways of inferring the theoretical mechanisms, different estimators, and additional control variables.

Content analysis

As a final caution, we decided to zoom in on the content of the industry press articles that mention Greenpeace, for two related reasons. First, one of our underlying assumptions was that the main measure of SMO prominence reflects support for the solar PV industry. However, an SMO (Greenpeace, in this particular case) might be prominent in the industry not because of its support but for other reasons (e.g., because it attacks solar PV or because of its role in delegitimizing incumbent industries; see the first example in Table 1). Second, one of our findings was that the effect of SMO prominence on commitments to solar PV is reduced for firms that have had adversarial relations with activists. If SMO prominence does not reflect support for the PV industry, this interpretation would need to be revised. Therefore, we decided to code the content of all industry press articles mentioning Greenpeace.

After content-coding all articles, we found that only about 2% of them indicate a negative stance by Greenpeace toward PV—typically for very specific issues, such as not recycling PV cells or the use of Cadmium Telluride (CsTe) in their production. Fewer than 8% of the articles mention Greenpeace's criticism or targeting of non-renewable energy. Most refer to legitimation or market support strategies (~37%) or information strategies (~52%) - see Table 1 for examples.[11] That is, about 89% of articles are

[10] Aside from offering corroborative evidence, this analysis also confirms that the effect of firm location is not driven by endogeneity. For example, the results related to H2 could be due to firms' active choice to locate their production facilities in countries with higher SMO membership. Because location choice is a fixed characteristic of producers (i.e., they decide to locate once, then expand or not in that country), including fixed effects at the producer level (i.e., country–firm dyad) provides a means to control for this source of endogeneity. Endogeneity due other entry characteristics (e.g. timing or mode) is also accounted for, for the same reason.

[11] About 16% of articles could not be classified; they did not fit in any category. The total exceeds 100%, because some articles were coded in more than one category (e.g., criticism of fossil fuels *and* support for solar PV).

associated with Greenpeace's supportive stance toward the industry, implying that our underlying assumption is well-founded. If we operationalize the variable that captures SMO prominence using only articles reflecting support for solar PV, the results of our analysis remain virtually intact (Model 15). Mentions that indicate support for the PV industry are associated with production growth of approximately 6.5 MW, which corresponds to an 18% increase over current production for the average firm, similar to the effect reported in our main tests (see Table 3). The interaction effects also reflect differences similar to those reported in Table 3. Thus, our results confirm that firms operating in this industry are differentially affected by an SMO that supports the industry.

DISCUSSION

Scholarship typically views social movement organizations and firms as opponents, but recent research notes how social movements can legitimize new sectors and create market opportunities for entrepreneurs, and that these opportunities vary with the regional strength of the SMOs that support the focal sector (Sine and Lee 2009; Hiatt et al. 2009; York and Lenox 2014; Pacheco et al. 2014). Yet the research emphasis placed by research on movement-supported markets on regional or industry-level effects has come at the expense of understanding intra-industry (inter-firm) variation (Pacheco and Dean 2015). Relying on data from the European solar photovoltaic industry, we have demonstrated that Greenpeace's prominence in the industry has strategic consequences for solar PV producers, which vary according to idiosyncratic firm attributes. Our analysis of solar PV cell manufacturers' expansions thus indicates the heterogeneous consequences that social movements generate within an industry. We find that SMO prominence is more consequential for firms located in countries with greater support for the focal movement organization and those whose extant commitments render them sensitive to cues that favor the industry's potential, but it is less influential for firms that have had an adversarial relationship in the past with environmental activists.

This article accordingly contributes to both the organizational literature on social movements and strategic management research. First, by revealing the influence of SMO prominence on solar PV firms, we extend recent investigations of the role of social movements as promoters of new practices (Weber et

al. 2008; Zietsma and Lawrence 2010; Van Wijk et al. 2013), rather than as opponents of firms' behaviors (King 2008; Hiatt et al. 2015; Aranda and Simons 2017). Our results suggest that the influence of SMOs on industry development is not limited to their impact on entrepreneurial entry or regulation. Rather, SMOs shape established firms' decisions, leading companies to commit more to emerging sectors. More importantly, our study contributes to the nascent but growing stream of research that studies variation in how firms are affected by social movements and activist groups that *attack* them (King 2008; McDonnell and King 2013; Waldron et al. 2013). We extend this research by offering new evidence that firms are also not uniformly affected by SMOs that *favor* their activities. Thus, rather than driving all firms in the same direction, SMOs may enlarge the heterogeneity within an organizational field.

Second, one of our findings speaks to the double-edged sword that anti-corporate campaigns entail. Firms that have been targeted more by environmental activists are deterred by SMOs' involvement in an industry, perhaps because the activists' scrutiny leads them to perceive their investments as more risky. Activist targeting, which usually represents an effort to persuade firms to move away from irresponsible behavior, thus may have the unintended consequence of preventing firms from committing to alternative industries that offer greater social benefits. One could also consider that SMOs act as gatekeepers who intentionally attempt to keep contested, inauthentic, firms out of the industry (McInerney, 2014; Grodal, 2017). We suggest that this is a less plausible explanation because, in this setting, contested companies were often criticized not for entering solar PV, but for not investing enough in the industry. Nevertheless, this mechanism is very likely to appear in market settings where the authenticity of producers is seen as more important than the mainstreaming of the market.

Third, prior studies suggest that activist groups can shape corporate outcomes, yet some of the organizational responses studied—such as public expressions of conformity (King 2008) or information disclosure (Reid and Toffel 2009)—are not necessarily indicators of important shifts in firm strategy. Some recent work has started to alleviate this concern, by showing for example that boycotts can increase the number of corporate social initiatives adopted by firms (McDonnell and King 2013) or that protests can change oil companies' enhanced oil recovery practices (Hiatt, Grandy and Lee 2015), which are more

costly responses and less likely to be merely symbolic. By demonstrating the link between SMO prominence and firms' production expansions, a variable that is central to firms' strategic considerations, we can confirm the impact of activists on important strategic decisions. What is more, their influence extends beyond inducing nascent entrepreneurial activity in settings with relatively low barriers to entry, such as independent wind power generation (Sine and Lee 2009), to inflicting change in a manufacturing industry where the stakes are higher. We thus provide strong evidence that social movement actions can exert substantive impacts on firms' strategies.

Fourth, this study complements research on expansion decisions by placing firms' social contexts squarely in the center of attention. The strategies that firms adopt are partly molded by their national contexts (Rivera 2010), yet most studies of expansion decisions focus on firm characteristics and competitive effects (e.g., Henderson and Cool 2003; Pacheco-de-Almeida et al. 2008). To the best of our knowledge, only one study has linked firms' expansion decisions to SMOs that favor the sector (Pacheco and Dean 2015), emphasizing how firm responses to social movement expectations depend on the behavior of competitors. We build on this research and show that firm expansion results from a complex set of interactions between SMO prominence and the firm's characteristics. As such, our study points to the broader need to study organizational attributes together with a firm's non-market environment to understand and potentially predict expansion decisions.

Empirically, our study advances prior literature in two ways. First, research on social movements and markets has been very U.S.-centric (see Van Wijk et al 2013 for a notable exception). We help address this issue and respond to a call by King and Soule (2007) for more research on activist influence across various contexts by examining SMOs' impact on firms that operate in a different geographical area and across countries. Our findings corroborate the need for cross-country analysis (Pilati 2013) by showing that cross-country heterogeneity conditions the impact of SMO prominence, offering meaningful insight into differences in the behaviors of business organizations. Second, SMO membership in a jurisdictional unit is a commonly used indicator of social movement support for an industry, but it is also one that cannot point directly to their causal impact. It is difficult to determine whether membership

affects corporate change or is simply a reflection of the underlying norms of the citizenry. First, using data from industry press–-a valid reflection of the cues to which the industry pays attention (Hoffman, 1999; Hoffman and Ocasio, 2001)–this study shows that the more prominent an SMO is, the more firms enhance their commitments to the industry. Second, we examine the impact of SMO support (at the national level) above and beyond the underlying norms or values of the citizenry, by regressing Greenpeace membership on known predictors of environmental values and including the residual in our regression of firms' commitment (Model 7). Although this method has its own limitations (i.e., it is not possible to include *all* potential predictors of values), it represents a significant advancement over prior research in this area. Our finding suggests that local support indeed affects producers' strategies, and further exacerbates the influence of SMO prominence on industry players, even when we account for the underlying values of the population.

This study also contains several limitations. Like any industry-specific study, our findings cannot be directly generalized to every setting. However, the results, obtained among solar PV producers, in combination with prior findings obtained from the wind power sector (Sine and Lee 2009; Vasi 2009; Pacheco et al. 2014), indicate a broad impact of social movements on renewable energy industries. These studies point to related conclusions across different geographical areas and levels of analysis, contributing to the accumulation of knowledge and allowing for greater confidence with regard to the external validity of the findings. Beyond these sectors, we expect that the conclusions of our research might apply to other fields in which social movements operate by trying to direct firms' investments toward markets with greater social or environmental value, such as recycling (Lounsbury 2001), organic food (Lee 2009), fair trade goods (Reinecke 2010), or sustainable tourism (Van Wijk et al. 2013).

A limitation of several studies in this area is their focus on a particular SMO, and our study is not immune to this concern. Sine and Lee (2009) chose the Sierra Club as the most relevant SMO; Hiatt et al. (2009) chose the Women's Temperance Union; we focus on Greenpeace. These choices were made on empirical grounds: through deep involvement in and study of the particular setting. Although the current study advances research by examining variation at the firm level, further studies can consider multiple

SMOs and exploit variation at the SMO level (Pacheco et al. 2014) to further advance research in this area. Future research can also address in more detail the tactics that SMOs use to support markets (Weber et al. 2008) or how their relationship with and influence over firms evolves as new industries transition to maturity (Carlos et al. 2014; Grodal 2017).

Although we offer more direct evidence of SMOs' influence than prior empirical research on movement-driven markets has, by exploiting data from industry press we only observe prominence—or the level of attention an SMO receives—at the industry level. We find systematic evidence that SMO prominence at the industry level is linked to important variations in firm strategies, and we infer the mechanisms that underlie this effect by exploring the conditions under which firms' expansion strategies are affected (Vancouver and Carlson 2015). Although the results are consistent with the proposed mechanisms and several robustness tests confirm our theoretical predictions, with our sample of firms from several countries and across more than two decades, it was not possible to obtain data on attention at the firm or decision-maker level. Further research could attempt to offer even more direct evidence of how SMOs are perceived by conducting experiments or case studies to understand where and when decision makers attend to prominent SMOs and how their attention affects the firm's expansion and other strategic decisions.

Finally, this study demonstrates a substantive influence of SMO prominence on firm strategy, suggesting the need for further research to uncover the implications for firm performance (Bartley and Child 2011; King and Soule 2007). Our finding that some "sticky" organizational attributes make firms more or less sensitive to SMOs suggests that social movement influences may account for variation in firms' performance as well. This article offers novel insights into how SMOs supporting an industry can influence firms' strategic choices; the need to understand their impact on firm performance presents an important opportunity for further work.

References

Aguirre, M., & Ibikunle, G. (2014). Determinants of renewable energy growth: A global sample analysis. ***Energy Policy*** 69, 374-384.

Aiken, L. S., West, S. G. 1991. ***Multiple regression: Testing and interpreting interactions***. Newbury Park, CA: Sage.

Andrews, K. T., Caren, N. 2010. Making the news movement organizations, media attention, and the public agenda. ***American Sociological Review*** 75(6) 841–866.

Aranda, A., Simons T. 2017. On two sides of the smoke screen: How activist organizations and corporations use protests and lobbying to influence institutional change. *In Social Movements, Stakeholders and Non-market Strategy (eds. Briscoe, F., B. King & J. Leitzinger),* ***Research in the Sociology of Organizations****, forthcoming*.

Armingeon, K., Knopfel, L., Weisstaner D., Engler S., Potolidis, P., Gerber, M. 2013. *Comparative political data set III 1990-2011*. Bern: Institute of Political Science, University of Berne

Ballinger, G. A. 2004. Using generalized estimating equations for longitudinal data analysis. ***Organizational Research Methods*** 7(2) 127–150.

Barnett, M. L. (2007). Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. ***Academy of Management Review***, 32(3), 794-816.

Bartley, T. Child, C. 2011. Movements, markets and fields: the effects of anti-sweetshop campaigns on U.S. firms, 1993-2000. ***Social Forces*** 90(2) 421-451.

Berrone, P., Gelabert, L., Massa-Saluzzo, F., & Rousseau, H.E. 2016. Understanding community dynamics in the study of grand challenges: How nonprofits, institutional actors, and the community fabric interact to influence income inequality. ***Academy of Management Journal***, 59(6), 1940-1964.

Bowen, F. 2014. After greenwashing: Symbolic corporate environmentalism and society. Cambridge University Press.

Briscoe, F., Safford, S. 2008. The Nixon-in-China effect: Activism, imitation, and the institutionalization of contentious practices. ***Administrative Science Quarterly*** 53(3) 460-491.

Briscoe, F., Gupta, A., & Anner, M. S. (2015). Social Activism and Practice Diffusion How Activist Tactics Affect Non-targeted Organizations. ***Administrative Science Quarterly*** 60(2).

Carlos C., & Lewis, B. 2017. Strategic Silence: Withholding certification status as a hypocrisy avoidance tactic. ***Administrative Science Quarterly***, in press.

Carlos, W. C., Sine, W. D., Lee, B. H., & Haveman, H. (2014). Gone with the Wind: industry development and the evolution of social movement influence. Working paper, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2746274.

Castells, M. 1997. *The power of identity: The information age: Economy, society, and culture*. New York: John Wiley & Sons.

Crilly, D., Zollo, M., & Hansen, M. T. (2012). Faking it or muddling through? Understanding decoupling in response to stakeholder pressures. ***Academy of Management Journal*** 55(6), 1429-1448.

Curtis, J. E., Baer, D. E., Grabb, E. G. 2001. Nations of joiners: Explaining voluntary association membership in democratic societies. ***American Sociological Review***, 66(6), 783-805.

Curtis, J. E., Grabb, E. G., Baer, D. E. 1992. Voluntary association membership in fifteen countries: A comparative analysis. ***American Sociological Review*** 57(2) 139-152.

Dalal, D. K., Zickar, M. J. 2012. Some common myths about centering predictor variables in moderated multiple regression and polynomial regression. ***Organizational Research Methods*** 15(3) 339–362.

Dalton, R. J. 2005. The greening of the globe? Cross-national levels of environmental group membership. ***Environmental Politics*** 14(4) 441-459.

David, R. J., Sine, W. D., Haveman, H. A. 2013. Seizing opportunity in emerging fields: How institutional entrepreneurs legitimated the professional form of management consulting. ***Organization Science*** 24(2) 356-377.

Davis, G. F., Thompson, T. A. 1994. A social movement perspective on corporate control. ***Administrative***

Science Quarterly 39(1) 141.
Dekker, P., Van den Broek, A. 1998. Civil society in comparative perspective: Involvement in voluntary associations in North America and Western Europe. ***Voluntas*** 9(1) 11-38.
Delmas, M. A., & Toffel, M. W. (2008). Organizational responses to environmental demands: Opening the black box. ***Strategic Management Journal*** 29(10), 1027-1055.
Durand, R. (2003). Predicting a firm's forecasting ability: The roles of organizational illusion of control and organizational attention. ***Strategic Management Journal*** 24(9), 821-838.
Durand, R., & Jacqueminet, A. 2015. Peer conformity, attention, and heterogeneous implementation of practices in MNEs. ***Journal of International Business Studies***, 46(8), 917-937.
Elfenbein, D. W., & Knott, A. M. (2015). Time to exit: rational, behavioral, and organizational delays. ***Strategic Management Journal*** 36(7), 957-975.
EPIA (European Photovoltaic Industry Association). 2008. Supporting solar photovoltaic electricity: An argument for feed-in tariffs. Available at http://www.epia.org/fileadmin/EPIA_docs/documents/An_Argument_for_Feed-in_Tariffs.pdf (accessed 25/6/2011).
EPIA and Greenpeace. 2001. Solar generation: Electricity for over 1 billion people and 2 million jobs by 2020. Available at http://www.greenpeace.org/international/Global/international/planet-2/report/2006/3/solar-generation.pdf (accessed 25/6/2011).
Fiss, P. C., Zajac, E. J. 2006. The symbolic management of strategic change: Sensegiving via framing and decoupling. ***Academy of Management Journal*** 49(6) 1173-1193.
Flamos, A., Georgallis, P.G., Doukas, H., Psarras, J. 2009. Policy oriented review for photovoltaics introduction in the EU. ***International Journal of Renewable Energy Technology*** 1(1) 64-80.
Fransson, N., Gärling, T. (1999). Environmental concern: Conceptual definitions, measurement methods, and research findings. ***Journal of Environmental Psychology*** 19(4) 369-382.
Franzen, A., Meyer, R. (2010). Environmental attitudes in cross-national perspective: A multilevel analysis of the ISSP 1993 and 2000. ***European Sociological Review*** 26(2) 219-234.
Gamson, W. A., Meyer, D. S. 1996. Framing political opportunity. In McAdam, D., McCarthy, J. D., Zald, M. N. (Eds.) *Comparative Perspectives on Social Movements: Political Opportunities, Mobilizing Structures, and Cultural Framings*. Cambridge: Cambridge University Press.
Georgallis, P. (2017). The link between social movements and corporate social initiatives: Toward a multi-level theory. ***Journal of Business Ethics*** 10: 1-17.
Georgallis, P. P., & Durand, R. 2017. Achieving High Growth in Policy-Dependent Industries: Differences between Startups and Corporate-Backed Ventures. ***Long Range Planning***, 50(4), 487-500.
Gilbert, R. J., Lieberman, M. 1987. Investment and coordination in oligopolistic industries. ***RAND Journal of Economics*** 18(1) 17–33.
Greenpeace. 2014. *Energy Revolution.* Retrieved from http://www.ehow.com/how_5084367_write-bibliography-online-source.html
Grodal, S. 2017. Field expansion and contraction: How communities shape social and symbolic boundaries. ***Administrative Science Quarterly***, Forthcoming.
Henderson, J., Cool, K. 2003. Learning to time capacity expansions: an empirical analysis of the worldwide petrochemical industry, 1975–95. ***Strategic Management Journal*** 24(5) 393–413.
Henderson, A. D., & Stern, I. (2004). Selection-based learning: The coevolution of internal and external selection in high-velocity environments. ***Administrative Science Quarterly*** 49(1), 39-75.
Hiatt, S. R., Sine, W. D., Tolbert, P. S. 2009. From Pabst to Pepsi: The deinstitutionalization of social practices and the creation of entrepreneurial opportunities. ***Administrative Science Quarterly*** 54(4) 635–667.
Hiatt, S., Grandy, J., 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.
Hoffman, A. J. (1999). Institutional evolution and change: Environmentalism and the US chemical

industry. ***Academy of Management Journal*** 42(4), 351-371.
Hoffman, A. J., Ocasio, W. 2001. Not all events are attended equally: Toward a middle-range theory of industry attention to external events. ***Organization Science*** 12(4) 414–434.
Hoppmann, J., Peters, M., Schneider, M., & Hoffmann, V. H. (2013). The two faces of market support—How deployment policies affect technological exploration and exploitation in the solar photovoltaic industry. ***Research Policy*** 42(4), 989-1003.
Ingram, P., Yue, L. Q., Rao, H. 2010. Trouble in store: Probes, protests, and store openings by Wal-Mart, 1998–20071. ***American Journal of Sociology*** 116(1) 53-92.
Jacobsson S., Andersson, B.A., Bangers, L. 2004. Transforming the energy system—the evolution of the German technological system for solar cells. ***Technology Analysis & Strategic Management*** 16(1) 3-30.
Jacobsson, S., Lauber, V. 2006. The politics and policy of energy system transformation—explaining the German diffusion of renewable energy technology. ***Energy Policy*** 34(3) 256–276.
Kapoor, R., Furr, N. R. 2015. Complementarities and competition: Unpacking the drivers of entrants' technology choices in the solar photovoltaic industry. ***Strategic Management Journal*** 36(3), 416-436.
Kassinis, G., Vafeas, N. 2006. Stakeholder pressures and environmental performance. ***Academy of Management Journal*** 49(1) 145–159.
Kayser, S. 2017. The Negative Relationship between Event-Specific Corporate Social Responsibility and Shareholder Value. *In Social Movements, Stakeholders and Non-market Strategy (eds. Briscoe, F., B. King & J. Leitzinger),* ***Research in the Sociology of Organizations****, forthcoming*.
King, B. G. 2008. A political mediation model of corporate response to social movement activism. ***Administrative Science Quarterly*** 53(3) 395–421.
King, B. G., Soule, S. A. 2007. Social movements as extra-institutional entrepreneurs: The effect of protests on stock price returns. ***Administrative Science Quarterly*** 52(3) 413–442.
King, B.G., McDonnell, M.H. 2012. Good firms, good targets: The relationship between corporate social responsibility, reputation, and activist targeting. *Corporate Social Responsibility in a Globalizing World: Toward Effective Global CSR Frameworks*. Edited by Kiyoteru Tsutsui and Alwyn Lim. Cambridge University Press.
Koopmans, R. 2009. Globalization or still national politics? A comparison of protests against the Gulf War in Germany, France, and the Netherlands. In Della Porta, D., Kriesi, H., Rucht, D. (Eds.). *Social Movements in a Globalizing World*, 2d edition. 57-70, Palgrave Macmillan, New York.
Lee, B. H. (2009). The infrastructure of collective action and policy content diffusion in the organic food industry. ***Academy of Management Journal*** 52(6), 1247-1269.
Lee, B. H., Sine, W. D. 2007. Constructing entrepreneurial opportunity: Environmental movements and the transformation of regional regulatory regimes. ***Applied Evolutionary Economics and Economic Geography***, 93-120.
Lenox, M. J., Eesley, C. E. 2009. Private Environmental activism and the selection and response of firm targets. ***Journal of Economics & Management Strategy*** 18 45–73.
Lounsbury, M. (2001). Institutional sources of practice variation: Staffing college and university recycling programs. ***Administrative Science Quarterly*** 46(1), 29-56.
Luo, J., Meier, S., & Oberholzer-Gee, F. 2012. No news is good news: CSR strategy and newspaper coverage of negative firm events. Harvard Business School. Working paper.
Lyon, T.P., & Montgomery, A.W. 2015. The means and end of greenwash. ***Organization & Environment*** 28(2), 223-249.
Marks G., McAdam, D. 2009. in Della Porta, D., Kriesi, H., & Rucht, D. (eds). Social Movements in a Globalizing world, 2nd , 97-111, Palgrave Macmillan, New York.
McCarthy, J. D., Zald, M. N. 1977. Resource mobilization and social movements: A partial theory. ***American Journal of Sociology*** 82(6) 1212–1241.
McDonnell, M. H., King, B. 2013. Keeping up appearances: Reputational threat and impression management after social movement boycotts. ***Administrative Science Quarterly*** 58(3) 387-419.

McInerney, P.B. 2014. From social movement to moral market: How the circuit riders sparked an IT revolution and created a technology market. Stanford University Press.
McDonnell, M. H., King, B. G., & Soule, S. A. (2015). A dynamic process model of private politics activist targeting and corporate receptivity to social challenges. ***American Sociological Review*** 80(3), 654-678.
McNamara, G., Bromiley, P. 1997. Decision making in an organizational setting: Cognitive and organizational influences on risk assessment in commercial lending. ***Academy of Management Journal***, 40(5), 1063-1088.
Mishina, Y., Dykes, B. J., Block, E. S., Pollock, T. G. 2010. Why "good" firms do bad things: The effects of high aspirations, high expectations, and prominence on the incidence of corporate illegality. ***Academy of Management Journal*** 53(4), 701-722.
Nesbit, R., Gazley, B. 2012. Patterns of volunteer activity in professional associations and societies. ***Voluntas*** 23(3) 558-583.
Nickerson, R. S. 1998. Confirmation bias: A ubiquitous phenomenon in many guises. ***Review of General Psychology*** 2(2) 175.
Ocasio, W. 1997. Towards an attention-based view of the firm. ***Strategic Management Journal*** 18(S1) 187-206.
Ocasio, W. 2011. Attention to attention. ***Organization Science*** 22(5), 1286-1296.
Pacheco, D. F., & Dean, T. J. (2015). Firm responses to social movement pressures: A competitive dynamics perspective. ***Strategic Management Journal*** 36(7), 1093-1104.
Pacheco, D. F., York, J. G., & Hargrave, T. J. (2014). The coevolution of industries, social movements, and institutions: Wind power in the United States. ***Organization Science*** 25(6), 1609-1632.
Pacheco-De-Almeida, G., Henderson, J. E., Cool, K. O. 2008. Resolving the commitment versus flexibility trade-off: The role of resource accumulation lags. ***Academy of Management Journal*** 51(3) 517–536.
Philippe, D., Durand, R. 2011. The impact of norm-conforming behaviors on firm reputation. ***Strategic Management Journal*** 32(9), 969-993.
Pilati, K. 2013. Understanding Social Movements: Theories from the Classical Era to the Present. By Steven M. Buechler Paradigm Publishers. 2011. *Social Forces*, 84.
Rao, H. 1998. Caveat emptor: The construction of nonprofit consumer watchdog organizations. ***American Journal of Sociology*** 103(4) 912-961.
Rao, H., Greve, H. R., Davis, G. F. 2001. Fool's gold: Social proof in the initiation and abandonment of coverage by Wall Street analysts. ***Administrative Science Quarterly*** 46(3) 502-526.
Reid, E. M., Toffel, M. W. 2009. Responding to public and private politics: Corporate disclosure of climate change strategies. ***Strategic Management Journal*** 30(11) 1157–1178.
Reinecke, J. (2010). 'Beyond a subjective theory of value and towards a 'fair price': an organizational perspective on Fairtrade minimum price setting.' ***Organization*** 17, 563-581.
Reinecke, J., Ansari, S. 2013. Be Fair or Care? Fairtrade and the Standardization of Ethical Practices. ***Academy of Management Proceedings*** 2013(1) 15766.
Rivera, J. 2010. ***Business and public policy***. Cambridge: Cambridge University Press.
Rootes, C. 2007. Environmental movements. In Snow, D. A., Soule, S. A., Kriesi, H. (Eds.) ***The Blackwell Companion to Social Movements***. Wiley-Blackwell, 608-640, Oxford.
Samdahl, D. M., Robertson, R. 1989. Social determinants of environmental concern specification and test of the model. ***Environment and Behavior*** 21(1) 57-81.
Schifeling, T. 2013. Defense against Recession: US Business Mobilization, 1950–1970. ***American Journal of Sociology***, 119(1), 1-34.
Schneiberg, M., King, M., Smith, T. 2008. Social movements and organizational form: Cooperative alternatives to corporations in the American insurance, dairy, and grain industries. ***American Sociological Review*** 73(4) 635-667.
Schurman, R. 2004. Fighting "Frankenfoods": Industry opportunity structures and the efficacy of the anti-biotech movement in Western Europe. ***Social Problems*** 51(2) 243–268.

Sine, W. D., Haveman, H. A., & Tolbert, P. S. (2005). Risky business? Entrepreneurship in the new independent-power sector. ***Administrative Science Quarterly*** 50(2), 200-232.
Sine, W. D., Lee, B. H. 2009. Tilting at windmills? The environmental movement and the emergence of the U.S. wind energy sector. ***Administrative Science Quarterly*** 54(1) 123–155.
Snow D., 2006 in Ritzer, G. (Ed.). The Blackwell encyclopedia of sociology (Vol. 4) 1780-1784. Blackwell Pub., Oxford.
Snow D., Benford R., 2009, in Della Porta, D., Kriesi, H., & Rucht, D. Social Movements in a Globalizing world, 2nd , Palgrave Macmillan, New York.
Soule, S. A. 2009. *Contention and corporate social responsibility*. Cambridge: Cambridge University Press.
Thompson, S. B. 2011. Simple formulas for standard errors that cluster by both firm and time. ***Journal of Financial Economics***, 99(1), 1-10.
Tversky, A., Kahneman, D. 1974. Judgment under uncertainty: Heuristics and biases. ***Science*** 185(4157) 1124-1131.
Van Liere, K. D., Dunlap, R. E. 1980. The social bases of environmental concern: A review of hypotheses, explanations and empirical evidence. ***Public Opinion Quarterly*** 44(2) 181-197.
Van Wijk, J., Stam, W., Elfring, T., Zietsma, C., & Den Hond, F. (2013). Activists and incumbents structuring change: The interplay of agency, culture, and networks in field evolution. ***Academy of Management Journal*** 56(2), 358-386.
Vancouver, J.B., Carlson, B.W. 2014. All Things in Moderation, Including Tests of Mediation (at Least Some of the Time). ***Organizational Research Methods***, doi: 1094428114553059.
Vasi, I. B. 2011. *Winds of change: The environmental movement and the global development of the wind energy industry*. New York: Oxford University Press.
Vasi, I. B., King, B. G. 2012. Social movements, risk perceptions, and economic outcomes: The effect of primary and secondary stakeholder activism on firms' perceived environmental risk and financial performance. ***American Sociological Review*** 77(4) 573–596.
Vasi, I.B., King, B.G. 2014. Going Green and Risky Businesses: The Adoption and Growth of Green Power Programs in the United States. *Working paper*.
Von Stein, J. 2008. The international law and politics of climate change ratification of the United Nations framework convention and the Kyoto Protocol. ***Journal of Conflict Resolution*** 52(2) 243–268.
Waldron, T. L., Navis, C., Fisher, G. 2013. Explaining differences in firms' responses to activism. ***Academy of Management Review*** 38(3) 397-417.
Walker, E.T., Martin, A.W., & McCarthy, J.D. 2008. Confronting the State, the Corporation, and the Academy: The Influence of Institutional Targets on Social Movement Repertoires. ***American Journal of Sociology*** 114(1), 35-76.
Weber, K., Heinze, K. L., DeSoucey, M. 2008. Forage for thought: Mobilizing codes in the movement for grass-fed meat and dairy products. ***Administrative Science Quarterly*** 53(3) 529–567.
Weber, K., Rao, H., Thomas, L. G. 2009. From streets to suites: How the anti-biotech movement affected German pharmaceutical firms. ***American Sociological Review*** 74(1) 106–127.
Weber, K. and Soderstrom, S.2012. in Bansal, P., & Hoffman, A. J. (Eds.). 2011. The Oxford handbook of business and the natural environment, 248-268. Oxford University Press.
York, J. G., Lenox, M. J. 2014. Exploring the sociocultural determinants of de novo versus de alio entry in emerging industries. ***Strategic Management Journal***.
Yue, L. Q., Luo, J., Ingram, P. 2013. The failure of private regulation: Elite control and market crises in the Manhattan banking industry. ***Administrative Science Quarterly*** 58(1) 37-68.
Zietsma, C., Lawrence, T. B. 2010. Institutional work in the transformation of an organizational field: The interplay of boundary work and practice work. ***Administrative Science Quarterly*** 55(2) 189–221.

TABLES

Table 1. Examples of SMO industry support strategies from Greenpeace's solar campaigns

		Source
De-legitimation strategies	***Attacking mainstream firms/practices*** "BP Amoco has become BP, and consequently, the tiny subsidiary BP Solarex has been transformed into BP Solar. While the rebranding could reinforce the position of the BP solar unit within the BP group, nothing is really changing inside the solar unit…. A Greenpeace spokesman was quoted in the same article as saying: 'BP doesn't stand for Beyond Petroleum. It stands for Burning the Planet.'"	Photon Intl., Aug. 2000
Legitimation and market support	***Legitimating alternative industry*** "José Luis García, energy representative at Greenpeace Spain … toured the country with a 'solar caravan' containing a 2.2 kW mobile PV system to convince the people that solar electricity works"	Photon Intl., Oct. 2006
	Mobilizing SMO members to support the industry "[C]apacity expansion in the U.S. and reductions in Germany have led Greenpeace Germany to mount a massive purchase program for German-made residential PV. Dr. Leggett indicated over 3700 Greenpeace members have pledged to purchase two kilowatt systems."	PV News, Jan. 1996
	Demonstrating support from the broader population "[Greenpeace] took to the streets of the Netherlands with its Solaris campaign seeking to win more terrain for simple plug-in AC modules… The result was that Greenpeace was able to collect 15,000 names of people willing to buy the AC modules made by the US-based AstroPower Inc."	Photon Intl., Sept. 2009
Information strategies	***Information provision*** "Rather than just complain about the British government's lack of commitment to deploying PV building components on new and renovated buildings, Greenpeace International has published a first rate report entitled 'Unlocking the power of our cities – solar power and commercial buildings'…. PV NEWS congratulates Greenpeace for this unemotional, quantitative approach to supporting PV."	PV News, Jan. 1996
	Disseminating optimistic cues "The Sarasin report … has increased its growth prognosis from an average of 13 percent until 2020 to *18 percent*…. In their Solar Generation 2004 study, the European PV Industry Association (EPIA) and Greenpeace predicted an average market growth of 27 percent by 2009, rising to *34 percent* by 2020." *[italics added]*	Photon Intl., Dec. 2005

Table 2. Descriptive statistics and correlation matrix

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Production	1.00												
2	Greenpeace prominence	0.19	1.00											
3	Greenpeace local support	0.27	0.11	1.00										
4	Past commitment	0.10	-0.15	0.07	1.00									
5	Adversarial relationship	-0.14	0.06	0.04	-0.12	1.00								
6	Media mentions	0.25	-0.01	0.31	-0.02	0.50	1.00							
7	Tenure in the industry	-0.07	0.13	-0.39	-0.02	0.10	0.03	1.00						
8	Rivals expansion	0.57	0.19	0.44	0.01	-0.19	0.23	-0.27	1.00					
9	Electricity prices	0.44	0.12	0.34	0.33	-0.19	0.21	-0.23	0.62	1.00				
10	Foreign firm	-1.21	0.05	-0.35	-0.05	0.21	0.10	-0.02	-0.01	0.33	1.00			
11	Industry growth	0.26	0.49	0.16	0.27	-0.13	0.00	0.05	0.30	-0.12	0.08	1.00		
12	Growth uncertainty	-0.11	0.24	-0.08	-0.38	0.20	-0.01	0.13	-0.09	-0.26	-0.04	-0.12	1.00	
13	Feed-in-tariff	0.37	0.45	0.31	-0.07	-0.11	-0.07	0.00	0.46	0.35	0.02	0.69	-0.23	1.00
	Mean	36.41	0.27	326616	0.07	0.42	5.48	12.56	274	8.72	0.32	25.72	4.37	10.67
	Std. Dev.	82.19	0.17	249749	0.07	0.92	3.03	7.84	548	2.04	0.46	11.02	2.91	9.96
	Min	0.00	0.00	10000	0.00	0.00	0.00	1.00	0	5.30	0	-0.09	0.83	0
	Max	570.40	0.50	827650	0.45	4.47	10.62	31.00	2182	13.72	1	39.38	13.69	25

Notes: Absolute values above .15 are significant at the 1 percent level.

Table 3. Determinants of production expansion of solar PV producers (growth model estimates)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
VARIABLES	Controls	H1	H2	H3	H4	Full Model
Greenpeace prominence		7.793**	7.089**	7.341**	8.333**	7.103**
		(2.355)	(2.080)	(1.986)	(2.512)	(1.834)
Greenpeace local support			23.917*			29.341**
			(11.598)			(10.446)
GP prominence X GP local support			3.611*			4.424**
			(1.518)			(1.663)
Past commitment				7.418**		7.037**
				(2.699)		(2.713)
GP prominence X Past commitment				5.430*		5.837*
				(2.744)		(2.634)
Adversarial relationship					-1.302	-0.075
					(0.962)	(1.025)
GP prominence X Adversarial rel.					-1.816*	-2.001**
					(0.707)	(0.717)
Other mentions					4.438**	2.696
					(1.703)	(1.640)
Lagged production	91.620**	91.797**	91.911**	82.892**	90.990**	82.667**
	(7.797)	(7.702)	(7.618)	(7.052)	(7.550)	(6.966)
Tenure in the industry	-2.962	-2.733	-2.489	-2.888	-3.977	-3.455
	(2.896)	(2.810)	(2.953)	(2.678)	(3.138)	(3.236)
Rivals expansion	-4.938	-4.523	-6.060	-2.002	-5.124	-4.153
	(5.011)	(4.852)	(5.066)	(3.309)	(4.904)	(3.391)
Foreign firm	-5.165+	-5.486+	-4.986	-5.504+	-6.645+	-5.952
	(3.096)	(3.131)	(3.172)	(3.157)	(3.749)	(3.975)
Electricity prices	5.918*	6.534*	7.401**	7.790**	5.840*	8.361**
	(2.611)	(2.594)	(2.747)	(2.584)	(2.633)	(2.833)
Industry growth	6.192	6.632	6.546	6.169	6.362	6.151
	(4.624)	(4.581)	(4.548)	(4.436)	(4.613)	(4.383)
Growth uncertainty	-3.526**	-4.314**	-3.475**	-4.012**	-4.124**	-2.840+
	(1.251)	(1.317)	(1.307)	(1.445)	(1.304)	(1.513)
Feed-in-tariff	-2.346	-1.634	-1.923	-0.686	-0.914	-0.560
	(1.595)	(1.533)	(1.569)	(1.424)	(1.587)	(1.461)
Country dummies	YES	YES	YES	YES	YES	YES
Period dummies	YES	YES	YES	YES	YES	YES
Observations	315	315	315	315	313	313
Countries	8	8	8	8	7	7
R-squared	0.889	0.893	0.894	0.904	0.894	0.907

Notes: Robust standard errors (adjusted for autocorrelated within-panel and across-panel disturbances) appear in parentheses. Non-dummy variables are standardized. ** $p < .01$. * $p < .05$. + $p < .1$.

Table 4. Effect of Greenpeace prominence for different values of the moderating variables

Greenpeace local support	Low	Average	High
Past commitment	Low	Average	High
Adversarial relationship	High	Average	Low
Change in production (MW)	**-5.15**	**7.10****	**19.37****

Notes: The Table summarizes the effect of *Greenpeace prominence* on production change for values of the moderating variables that are favorable (versus unfavorable) to expansion, calculated based on Model 6. Low: mean- 1 st. deviation; Medium: mean; High = mean + 1 st. deviation. ** $p < .01$. * $p < .05$. + $p < .1$. (two-sided tests)

Table 5. Robustness tests

	Model 7 [a]	Model 8	Model 9	Model 10	Model 11
VARIABLES	Values	Country-level	Industry-level	Dummy var.	De alio only
Greenpeace prominence	7.305**	10.203**	8.995**	9.387**	5.286**
	(2.096)	(2.730)	(2.726)	(2.761)	(1.698)
Greenpeace membership prediction	13.884				
	(11.044)				
Greenpeace membership residual	14.307*				
	(7.167)				
GP prominence X GP membership prediction	1.649				
	(1.052)				
GP prominence X GP membership residual	2.390*				
	(1.115)				
Electricity price increase		5.447**			
		(2.041)			
GP prominence X Electr. price change		2.983**			
		(1.008)			
GP prominence X Industry growth			4.193**		
			(1.613)		
Adversarial relationship [dummy]				-6.323+	
				(3.397)	
GP prominence X Adversarial rel. [dummy]				-5.976**	
				(2.029)	
Adversarial relationship [de alio]					-0.526
					(0.639)
GP prominence X Adversarial rel. [de alio]					-1.136*
					(0.462)
Other mentions				5.333**	2.743
				(1.702)	(2.121)
Lagged production	91.910**	92.012**	91.946**	90.805**	98.951**
	(7.636)	(7.914)	(7.648)	(7.541)	(8.435)
Other controls	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES
Period dummies	YES	YES	YES	YES	YES
Observations	312	315	315	313	208
Countries	8	8	8	7	7
R-squared	0.894	0.897	0.894	0.895	0.919

[a] *GP membership prediction* and *GP membership residual* in Model 7 refer to the result and the residual, respectively, from a regression of Greenpeace membership on known predictors of environmental values.

APPENDIX A

We describe the process used to construct the variable *Adversarial Relationship* using media reports of activist targeting drawn from LexisNexis.

1. Following a thorough review of the empirical literature on activist targeting of firms (e.g. Eesley and Lenox, 2006; King and Soule, 2007; King, 2008; Lamin and Zaheer, 2012; Lenox and Eesley, 2009), we settled on the following initial search string (which was used by Vasi and King, 2012) to capture activist targeting:
   (environmental group or environmental organization or environmental activist or environmentalist) within the same paragraph (protest or boycott or demonstration or lawsuit) within the same paragraph (company name)
2. A pilot search with a subset of the companies in the sample and these keywords helped us adjust the keywords to ensure an inclusive search string. The final search string thus became:
   (environmental group or environmental organization or environmental activist or environmentalist or environmental NGO or green NGO) within the same paragraph (protest or boycott or demonstration or lawsuit) within the same paragraph (company name)
3. We conducted a search for all firms using these keywords. Because the number of resulting articles for some firms was surprisingly low, we translated the keywords into a second language and selected two firms not based in the United Kingdom to perform the search again. We found many reports of activist targeting that were not captured by English-speaking media.
4. Research assistants were hired to translate the keywords and repeat the search for firms in other languages. These RAs were all graduate students and fluent in the respective language. We covered all the main languages of the countries in which firms in our sample were located (English, Spanish, French, German, Dutch, and Italian), except Danish: only one firm was present in Denmark during our observation period and for only three years, contributing just two observations to our analysis (due to time lags). We considered the cost of analyzing an additional language unjustifiable and excluded this firm from the analyses that relied on this variable.
5. After collecting all articles that resulted from the search, the research assistants identified and eliminated false positives, that is, articles that (a) do not refer to the firm being analyzed but instead refer to another entity or word that happens to be the same or (b) do not indicate an adversarial relationship between the firm and activists but mention the firm for another reason. The research assistants were given examples of false positives and consulted one of the authors over several rounds whenever they were in doubt. Because most prior research does not eliminate false positives, we were conservative in excluding articles; we retained any articles resulting from the search if they contained *any* indication of an adversarial relationship between the firm and environmental activists.
6. The articles from all languages were aggregated to the firm and year level, to code all instances in which a firm appears to be targeted by environmental activists per year and per 3-year period.

APPENDIX B

Table B1. Additional robustness tests

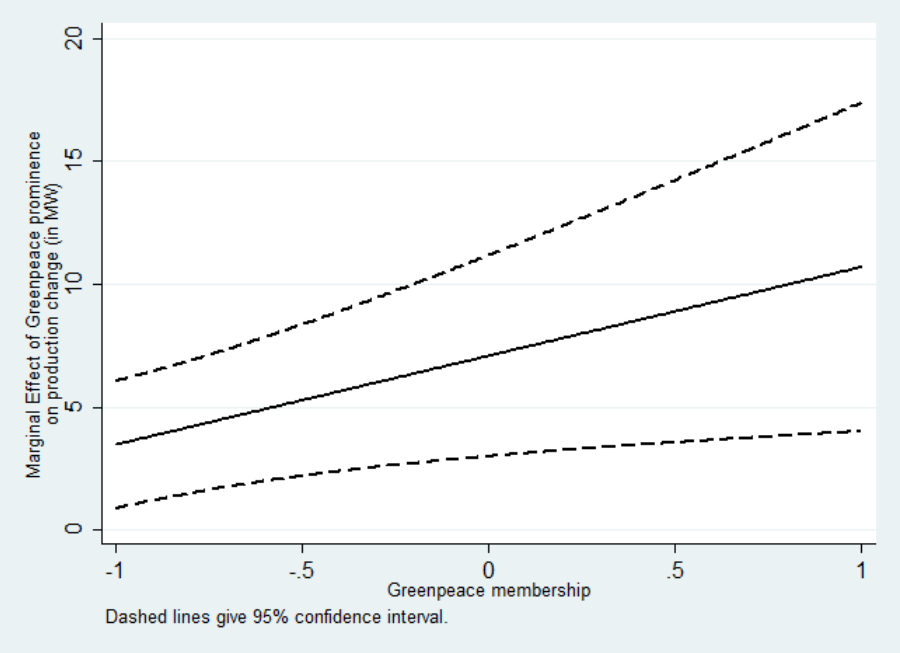
	Model 12	Model 13	Model 14	Model 15
VARIABLES	Full Model Outliers	Full Model GEE	Full Model FE producer	Full Model Supportive only
Greenpeace prominence	6.528**	6.955**	7.668**	6.474**
	(1.635)	(2.221)	(1.239)	(2.100)
Greenpeace local support	24.546*	30.050*	8.483**	27.701*
	(11.152)	(13.512)	(1.799)	(10.995)
GP prominence X GP local support	3.388**	4.575**	3.813**	2.902*
	(1.309)	(1.699)	(0.326)	(1.401)
Past commitment	4.912*	7.200**	6.489**	6.513**
	(2.100)	(1.889)	(2.085)	(2.317)
GP prominence X Past commitment	2.694**	6.062**	5.517*	4.116+
	(1.019)	(1.594)	(2.446)	(2.151)
Adversarial relationship	0.183	-0.253	-1.398*	-0.030
	(0.931)	(2.059)	(0.656)	(1.034)
GP prominence X Adversarial rel.	-1.712*	-1.918	-2.349**	-1.678*
	(0.673)	(1.407)	(0.328)	(0.842)
Other mentions	1.687	2.538	5.951**	2.823+
	(1.427)	(2.250)	(1.188)	(1.632)
Lagged production	97.210**	80.669**	76.877**	85.090**
	(8.227)	(2.780)	(1.652)	(6.808)
Tenure in the industry	-3.162	-3.058	0.797	-4.347
	(2.849)	(2.216)	(1.408)	(3.464)
Rivals expansion	-4.987	-3.378	-2.995	-3.147
	(3.309)	(2.867)	(2.634)	(3.730)
Foreign firm	-4.689	-4.778		-5.096
	(3.210)	(5.252)		(3.827)
Electricity prices	6.603*	9.375**	4.420	9.105**
	(2.735)	(3.586)	(4.719)	(3.018)

Demand growth	6.178	5.244	5.148	5.981
	(4.332)	(4.227)	(3.293)	(4.457)
Growth uncertainty	-2.872*	-2.750	-3.319**	-1.362
	(1.163)	(2.594)	(0.378)	(1.296)
Feed-in-tariff	-1.446	-0.062	-2.024	-1.680
	(1.268)	(3.273)	(1.589)	(1.508)
Population			-1.707+	
			(0.928)	
GDP per capita			-4.833	
			(3.436)	
Concentration of energy sector			-11.203	
			(7.809)	
Country dummies	YES	YES	-	YES
Producer dummies	-	-	YES	-
Period dummies	YES	YES	YES	YES
	(7.887)	(11.226)	(6.795)	(9.345)
Observations	307	306	313	313
Countries	7	7	7	7
R-squared [a]	0.853		0.919	0.903

Notes: Robust standard errors (adjusted for autocorrelated within-panel and across-panel disturbances) appear in parentheses. Non-dummy variables are standardized. ** $p < .01$. * $p < .05$. + $p < .1$.

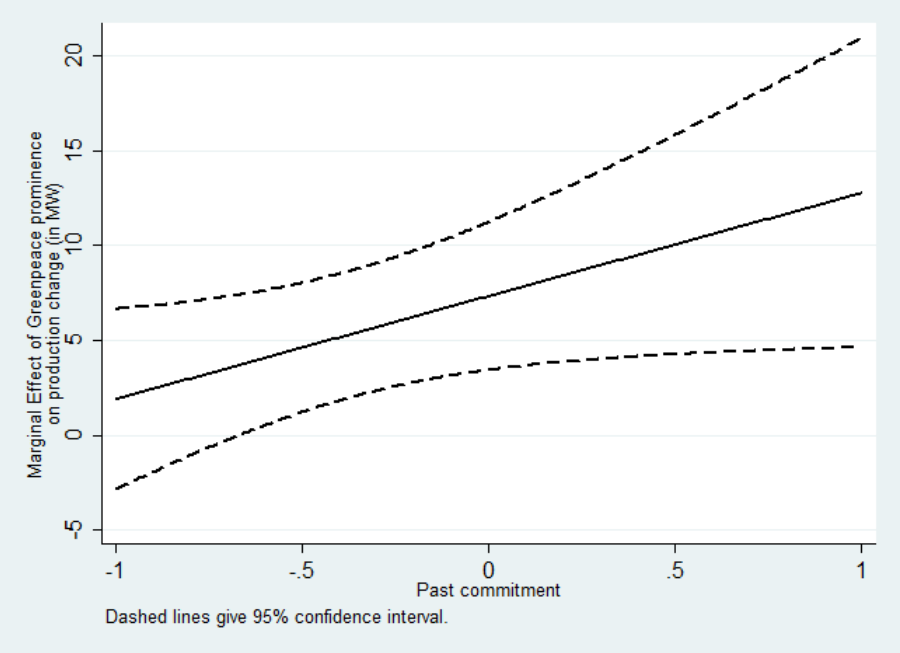
[a] The GEE model does not estimate R-square as a model of fit, but the Wald-Chi2, which is 2833 for Model 13.

Figure B1. Interaction plot of Greenpeace prominence and Greenpeace local support



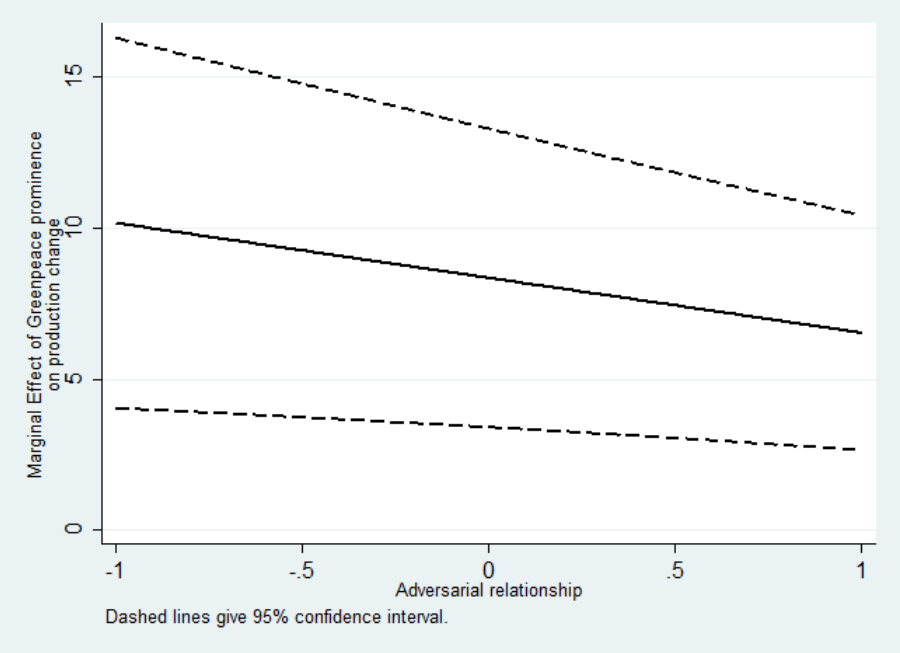
Note: This figure shows the impact of *Greenpeace prominence* on PV production expansion (measured in MegaWatts) for values of *Greenpeace* local support (membership) that range from mean – 1 to mean + 1 standard deviation. The upward slope indicates that the influence of Greenpeace prominence increases with Greenpeace local support.

Figure B2. Interaction plot of Greenpeace prominence and Past commitment



Note: This figure shows the impact of *Greenpeace prominence* on PV production expansion (measured in MegaWatts) for values of *Past commitment* that range from mean – 1 to mean + 1 standard deviation. The upward slope indicates that the influence of Greenpeace prominence increases with past commitment.

Figure B3. Interaction plot of Greenpeace prominence and Adversarial relationship



Note: This figure shows the impact of *Greenpeace prominence* on PV production expansion (measured in MegaWatts) for values of *Adversarial relationship* that range from mean – 1 to mean + 1 standard deviation. The downward slope indicates that the influence of Greenpeace prominence decreases with the value of adversarial relationship.