EXPLORING THE SOCIOCULTURAL DETERMINANTS OF DE NOVO VERSUS DE ALIO ENTRY IN EMERGING INDUSTRIES

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The influence of institutional factors on firm entry has long interested strategy scholars. However, we have limited understanding of how the sociocultural environment, defined as the unwritten, decentralized “rules of the game,” influences founding rates in emergent industries; we know even less about how these noneconomic factors differentially influence entry by new entrepreneurial (de novo) firms versus diversifying incumbent (de alio) firms. Utilizing a unique dataset on entry in the green building supply industry, we find that, while economic and policy factors are highly correlated with de alio entry, the sociocultural environment exerts a greater influence on de novo firms. Our findings contribute to the literature on corporate demography, institutions and entrepreneurship, and industry emergence. Copyright © 2013 John Wiley & Sons, Ltd.

INTRODUCTION

Emergent industries are comprised of both new and diversifying firms. The heterogeneity in strategies (Fan, 2010; Khessina and Carroll, 2008; Klepper and Simons, 2000), timing (Klepper and Graddy, 1990; Mitchell, 1989, 1991), and performance (Carroll et al., 1996; Ganco and Agarwal, 2009) of de novo (entrepreneurial start-ups) and de alio (diversifying incumbents) firms during industrial emergence has become a classic theme of the strategic management literature. Yet, the determinants of entry by de novo versus de alio firms remain unclear. Given the broad finding that de alio firms are more likely to survive and succeed in an emerging industry due to their greater resources, legitimacy, and experience, what drives entrepreneurial de novo entry into an emergent industry?

Management scholars have accumulated significant evidence that economic, political (Gentry and Hubbard, 2000; Miller, 1983; Shane, 1996; Sobel, 2008), and sociocultural factors influence entry (see Sine and David, 2010 for a review). While the organizational ecology literature (Hannan and Carroll, 1992; Hannan and Freeman, 1977) has long examined how and why de novo and de alio firms differ in their survival rates and timing of entry (see Carroll and Khessina, 2006 for a review), this literature has not offered “a conceptual framework for theory about the macroenvironment, something that current practice seems unlikely to generate.” (Carroll and Khessina, 2006: 179).

We develop and test such a framework by examining how the economic, political, and sociocultural environment differentially influences
entry by de novo versus de alio firms in the green building supply industry from 2000 to 2007. The U.S. green building supply industry has emerged to support demand for green building, defined as the practice of reducing negative environmental impacts in building construction (Eichholtz, Kok, and Quigley, 2010; Hoffman and Henn, 2008). The environmental benefits of green building are inherent to this industry, and there are heterogeneous factors promoting environmentalism across different states (Bansal and Roth, 2000; Hoffman, 1999; Sine and Lee, 2009). Thus, this context provides a robust setting to understand better how the institutional setting influences the entry of de novo versus de alio firms. We find that while economic and regulatory factors are predictive of entry by de alio diversifying incumbent firms, sociocultural factors may exert higher influence on de novo than de alio firms.

These findings contribute to several research areas. First, we contribute to the literature on de novo versus de alio entry. Rather than examining heterogeneity in firm behaviors and outcomes (Carroll, 1985; Carroll et al., 1996; Chen, Williams, and Agarwal, 2011; Fan, 2010; Ganco and Agarwal, 2009), we offer one of the few studies to examine the differential drivers of entry. Further, ours is the first study, to our knowledge, that examines the influence of the sociocultural environment on entry by de novo versus de alio firms. Second, for the field of entrepreneurship, we expand knowledge of how the institutional environment can influence entrepreneurial entry (Hiatt, Sine, and Tolbert, 2009; Sine and Lee, 2009) by examining the broader, less formalized effect of social norms (Elster, 1989). Our study offers empirical evidence that the institutional environment, and particularly sociocultural factors, differentially influence entrepreneurial ventures in fields with distinct social and environmental implications.

Third, aligned with extant research, our findings suggest that the sociocultural environment is a powerful factor in encouraging the entry of entrepreneurial firms seeking to create environmental benefits (Meek, Pacheco, and York, 2010; Russo, 2003; Sine and Lee, 2009; Wang and Bansal, 2012). Understanding how the sociocultural environment impacts entry by de novo and de alio firms into environmentally beneficial industries has important strategic implications for policy makers, entrepreneurs, and managers.

THEORETICAL BACKGROUND

Economists and management scholars have long explored the influence of institutional factors on organizations and emergent industries (e.g., DiMaggio, 1988; DiMaggio and Powell, 1983; Meyer and Rowan, 1977; North, 1990). These factors can be broadly classified into economic, regulatory, and sociocultural factors (Shane, 2004). Sociocultural factors can promote both normative (values and expectations) and cultural-cognitive (schema and awareness) legitimacy for an emergent industry (Scott, 1995: 77).

Scott (2010) points out that studies have largely focused on the regulative and economic dimensions of the institutional environment rather than its normative aspects. Recent studies on the intersection of institutions and entrepreneurship have begun to remedy this oversight (Tolbert, David, and Sine, 2011) by examining the influence of social movements on entry (Sine and Lee, 2009). These studies suggest that normative influences, dispersed through social movement organizations, exert strong pressure on entry (Pratt and Kraatz, 2009). Less examined have been how the broader, less formalized sociocultural environment—such as social norms (Elster, 1989)—affects entry.

A nascent stream of research examining renewable energy entrepreneurship provides evidence that the context of environmentally beneficial industries could shed light on the link between the sociocultural environment and entry. For example, Russo (2003) finds that state-level trade associations supporting the independent power production industry had a greater positive effect on entry for renewable energy firms than coal and natural gas firms. Similar effects have been noted in the wind (Sine and Lee, 2009) and solar energy (Meek et al., 2010) industries. However, these studies do not differentiate how different aspects of the sociocultural environment (e.g., social movements vs. social norms) will differentially impact de novo versus de alio entrants.

The institutional environment and organizational entry mode

A substantial literature in organization theory has examined how entry mode (de novo vs. de alio) affects firm outcomes (see Caroll and Hannan, 2000) and the competitive dynamics between types of entrants (see Markman and Phan, 2011).
The overarching findings of this literature are (1) de alio firms enjoy an initial advantage because they enter with greater resources and complementary capabilities than de novo entrants (Klepper and Simons, 2000; Mitchell, 1991; Rao, 1994) and (2) this advantage erodes over time in dynamic environments because de novo firms tend to be more fluid, adaptable, and innovative (Agarwal et al., 2004; Hannan and Freeman, 1984; Khessina and Carroll, 2008).

While these fundamental insights have held across a wide range of empirical studies (Carroll et al., 1996; Hannan et al., 1998; Mitchell, 1994), Carroll and Khessina (2006) point out that the literature has largely focused on how de novo and de alio entrants interact and compete to drive entry (Carroll and Hannan, 1989; Hannan and Freeman, 1977). The extant literature says little about either the motivations of entrepreneurial entrants or the impacts of macroinstitutional variables on entry. Thus there is “...no applicable general theory about how entrepreneurs react to exogenous institutional and governmental changes in the environment” (Carroll and Khessina, 2006:181). Firm identity and legitimacy provide two mechanisms for developing such a theory.

Identity

De novo firm identity is often highly aligned with an emerging industry, whereas de alio firm identity is primarily derived from activities outside the focal market (McKendrick and Carroll, 2001). For de novo firms, identity is tied to being “authentic” to the emerging industry (McKendrick et al., 2003); the firm’s attention and resources are dedicated only to the emerging market. For example, in the brewing industry “craft” brewers maintain a differentiated identity that is reliant on the use of traditional, high-quality ingredients and small, localized production to distinguish them from mass producers (Carroll and Swaminathan, 2000). Similar dynamics have been recorded in the organic foods (Lee, 2009), grass-fed beef (Weber, Heinze, and DeSoucey, 2008), and renewable energy (Sine and Lee, 2009) industries. We propose that firm identities tied to larger sociocultural norms, such as environmental norms of avoiding pesticides, growth hormones, and polluting forms of energy, can act as a legitimating resource for de novo firms (Carroll and Khessina, 2006). Because such de novo firm identities are likely to be tied to long-term, noneconomic returns (Wang and Bansal, 2012) such as solving an environmental issue, they will often engage in actions that increase their normative legitimacy (Miller et al., 2012).

In contrast, de alio firms may not be as readily perceived as “authentic” when entering into an emerging industry. Just as a focused identity can legitimate de novo firms, de alio firms may struggle to project multiple, and even competing, identities across industries. De alio firms have legacy identities, often related to economic profitability, which may undermine their efforts to diversify. For example, Carroll and Swaminathan (2000) found that the presence of specialty brewpubs accelerated negative assessments of larger brewers, even when the large brewers produced similar “craft” beer. Some evidence suggests that de alio entry may not even assist in legitimizing emerging industries (McKendrick et al., 2003).

Because authentic, market-focused identities may be a critical factor for de novo firms’ success in emerging industries, particularly when the industry has a clear social or environmental impact, we propose that de novo firms will be more: (1) aware of the informal, normative institutions impacting their focal industry and (2) influenced by such institutions.

Legitimacy

While de alio firms can rely on extant capabilities (Hannan and Freeman, 1984) to establish legitimacy and access to valuable resources, such options are often unavailable to de novo firms (Khessina and Carroll, 2008). Faced with a lack of legitimacy for both the emergent sector and the new firm itself (Suchman, 1995), de novo firms may be motivated by different aspects of the institutional environment than de alio firms. For example, Weber and his colleagues (2008) found that grass-fed beef producers drew on relationships with both religious and environmental groups to build legitimacy for their practices. Because de novo firms are unable to rely on the legitimacy of an economic track record, they may draw on the normative legitimacy offered by sociocultural institutions. For example, Sine and his colleagues (Sine, Haveman, and Tolbert, 2005) found that media coverage of the emergent independent power sector had a greater impact on renewable energy entrants than traditional energy firms. These
findings suggest that de novo firms utilize their focused identity as a means to gain normative legitimacy with potential employees, investors, and customers.

De alio firms are likely also impacted by the sociocultural environment, particularly when they attempt to enter industries that are not aligned with their extant identity. When firms enter into new markets, both external and internal stakeholders may question their legitimacy. Carroll and Khessina propose that identity “delineates the magnitude of the actions that a firm may undertake without violating expectations of its audience” (2006: 191). De alio firms are embedded within a web of existing customers, investors, and employees that has been with them since before diversification. It is likely that, unless they are targeted for activism, de alio firms will focus on their current, internal stakeholders (Parmar et al., 2010) and will thus legitimize diversifying entry through the economic promise of the emerging industry (Hannan and Freeman, 1984). There is consistent, strong evidence that the economic legitimacy of de alio firms creates a greater likelihood of success. However, past success and proven abilities often lead to fixed routines and assessments (March and Simon, 1958). For de alio firms, economic and regulatory arguments may push entry into an emergent sector.

Based on the above review of the literature, we propose that de novo versus de alio entry will be differentially impacted by the institutional environment because of firm identity and forms of legitimacy sought. We next hypothesize how the economic, regulatory, and sociocultural environment will differentially impact entry by de novo versus de alio firms.

HYPOTHESES

Economic environment and entry

While it is intuitively clear how the economic environment impacts the overall rate of entry (Gentry and Hubbard, 2000; Shane, 2004), its impact on de novo versus de alio entry is little understood and has often been treated as a control variable (Carroll and Khessina, 2006).

For de novo firms, the economic munificence of an emerging industry is a critical consideration. As new entrants lack the financial resources, capabilities, and capital availability of de alio firms (Carroll et al., 1996), they will need to achieve a positive cash flow quickly. Further, de novo entrants may not possess the network or legitimacy within the industry that de alio firms have established (Bruderl and Schussler, 1990; Freeman, Carroll, and Hannan, 1983; Stinchcombe, 1965). For de alio firms, positive economic conditions represent opportunity for diversification and reduce the uncertainty of entering new markets. Thus, positive economic conditions mitigate the risk faced by both type of entrants. However, from an identity and legitimacy perspective, we would expect to see differential impacts of the economic environment particularly in the context of socially or environmentally relevant industries.

Economic considerations are vital even for entrepreneurs dedicated to an explicit social mission (Dacin, Dacin, and Tracey, 2011). Environmental entrepreneurs whose products and services address environmentally relevant market failure (Dean and McMullen, 2007; Lenox and York, 2012) are still beholden to the need to generate economic rents. However, because such entrepreneurs’ identity is linked to environmental beliefs and normative assessments, as well as the possibility for economic profits (York and Venkataraman, 2010), they may be willing to take on greater levels of economic risk. Individuals seeking to establish environmentally relevant businesses will likely be embedded within social networks that normatively value such behavior (Fauchart and Gruber, 2011). Therefore, they will foster a focused firm identity that is tightly linked to their product market. Because of founder motivations, and their strong focal firm identity, de novo entrants may seek to demonstrate normative legitimacy (Carroll and Swaminathan, 2000; Rao, 1994; Swaminathan, 1995) and thus “defy (or at least suggest arguments alternative to) rational action interpretations” (Carroll and Khessina, 2006: 193). For example, a green building entrepreneur described his firm to us as:

... we are a green company. We’re not a company that’s trying to go green. A lot of companies have a lot of baggage, you know, “We’re trying to move to green.” No, our company is already green. We created a green company... we cover the carbon footprint required to produce [our products] in only 62 days after they’re installed.... We use all recycled materials. We use recycled...
paper. So we have a philosophy of being green, not just going green, which I think is very important... if you're going to talk the talk, you've got to walk the walk.

While de alio firms likely have internal interest and even champions for diversification, we propose that they are more likely influenced by economic conditions within an industry than de novo entrants. First, de alio firms’ current resources may not allow them to compete effectively in the nascent market (Helfat and Lieberman, 2002) and must be adjusted at considerable opportunity cost. Second, because de alio firms have ongoing operations they also have superior knowledge and awareness of economic conditions (Carroll et al., 1996) within the broader industry than that possessed by de novo firms at the time of entry (Caroll and Hannan, 2000; Khessina and Carroll, 2008). Finally, de alio firms’ legitimacy is tied to an identity that is linked to economic profits. Because de alio firms are beholden to extant economic stakeholders, diversification into emergent industries, particularly those based on environmental or societal benefits, will need to be justified on an economic basis (Margolis and Walsh, 2001). Thus,

Hypothesis 1: Economic conditions in an emerging industry will have a greater positive association with entry by de alio (diversifying incumbent) firms than with entry by de novo (entrepreneurial) firms.

Regulatory environment and entry

The regulatory environment can influence entry through two types of policies. First, the state may issue regulatory policies that mandate or forbid the use of specific products. For example, renewable energy portfolio standards, or mandates for utilities to adopt renewable energy, have created opportunity for wind and solar energy entrepreneurs (Meek et al., 2010; Sine and Lee, 2009) and fostered entry by incumbent firms.

Regulatory policies mandating the adoption of an industry’s products create regulative legitimacy (Scott, 1995) for the industry. For example, government policies requiring the adoption of more environmentally friendly practices, such as environmental certification (King, Lenox, and Terlaak, 2005) or establishing property rights for environmental externalities (Pacheco, Dean, and Payne, 2010), would be expected to increase entry by de novo firms because they legitimize the emerging industry (Scott, 1995). For de alio firms, such policies show that adoption may be required in order to avoid further regulation of the firm’s central industry (Lenox, 2006) and to halt the loss of market share in emerging industries. We therefore expect that such regulatory policies would have a similar effect on both de novo and de alio entry.

As an alternative to regulatory mandates, the state can influence entry through providing economic incentive policies, such as tax breaks, for adoption of products and services (Holtz-Eakin, 2000). A well-known example of economic incentives driving entry is the recurring expiration and reinstatement of the U.S. renewable energy tax credit, which has been explicitly linked to entry into solar and wind production (Pernick and Wilder, 2007) by incumbent utilities. Such incentives can have a strong effect on the development of emergent industries and encourage entry by all firms (Sine et al., 2005). However, the perspectives of identity and legitimacy can differentiate the effect of such incentives on de novo versus de alio entry.

De novo firms in emerging industries are likely embedded in, and aware of, the shifting social movements and norms that have fostered incentive policies (Pratt and Kraatz, 2009); therefore economic incentives for the industry’s products, while helpful, will likely have a limited influence on de novo entrants. Incentives may be helpful for de novo firms motivated by a strong identity focused in the emerging industry, but for de alio firms incentives signal (1) a potential shift in their focal market, (2) the need to adopt a proactive stance and diversify their products to avoid more stringent regulation and stakeholder activism (Eesley and Lenox, 2006; Kivleniece and Quelin, 2012), and (3) an economic opportunity for diversification. The context of environmentally beneficial industries, and green building in particular, illustrates this effect.

Although the common solution to environmental problems is one of government regulation, government may alternatively encourage firms to adopt voluntary self-regulation. For example, rather than developing a governmental certification for green building, states have endorsed adoption of the Leadership in Energy and Environmental Design
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(LEED) green building certification by providing economic incentives (Yudelson, 2007). These policies strongly signaled the need for de alio firms to market products that will assist in achieving LEED certification, whereas de novo green building suppliers had already focused on such products. In addition, these economic incentives likely bolster the market for green building by encouraging economically focused construction customers to adopt. Such clients may not be attracted by the normative identity of de novo entrants, but readily adopt de alio offerings. One green building entrepreneur described the effect of incentive policies as follows:

They matter. They definitely matter. Are they the driver? They’re not the sustainer, I can tell you that... I think back to the 80s when we had the solar rebates. And it created... an industry that shriveled up and died overnight. And I wouldn’t want to see that happen again. And it’s because it didn’t have [the societal support] I spoke about earlier. It didn’t have the buy-in, the political and private willpower... It’s just, “OK, if the numbers work, we’ll do it.”

In summary, we propose that while regulatory mandates will similarly impact both new entrants and diversifying incumbents, de alio firms will be more highly encouraged by economic incentives than de novo firms (King, Prado, and Rivera, 2012; Lenox, 2006). For de alio firms, incentives economically legitimate the emerging segment and build the market, allowing greater justification of entry with extant stakeholders. Thus,

Hypothesis 2: Economic incentive policies for an emerging industry’s products will have a greater positive association with entry by de alio (diversifying incumbent) firms than with entry by de novo (entrepreneurial) firms.

Sociocultural environment and entry

In contrast to the centralized, government-enforced institutions represented by the regulatory environment, the social-cultural environment consists of decentralized institutions (Ingram and Silverman, 2002) enforced through normative legitimacy (Scott, 1995, 2008). For this study, we define the sociocultural environment as the beliefs and attitudes that actors in a region hold toward the moral correctness of specific activities, aligned with Scott’s normative pillar of legitimacy (1995, 2010). These beliefs influence entry rates through affecting perceptions of the desirability of entering a new market and the potential success of entry (McMullen and Shepherd, 2006). Empirically, scholars have examined the role of social movements (Hiatt et al., 2009; Lounsbury, Ventresca, and Hirsch, 2003; Sine and Lee, 2009) and social norms (Meek et al., 2010) in moderating founding rates. However, the differentiated effect of the sociocultural environment on de novo versus de alio entry has received little theoretical or empirical attention.

There is significant evidence to suggest that collective action, particularly by social movements, can have a strong influence on de novo entrepreneurial entry. Social movements are “organized collective endeavors to solve social problems” (Rao, Morrill, and Zald, 2000: 244). They are the collective action movements of individuals and organizations with shared identities or goals (Blumer, 1969) toward social change (McCarthy and Zald, 1977a). Social movements are often enacted through social movement organizations (SMOs) which are “complex, or formal, organizations which identify their goals with the preferences of a social movement or a countermovement and attempt to implement those goals” (McCarthy and Zald, 1973: 1218) through collective action (McCarthy and Zald, 1973; Zald and McCarthy, 1986).

While collective action will clearly influence those de alio firms specifically targeted for activism (Eesley and Lenox, 2006), we propose that the overall influence of collective action will be less on de alio firms than on de novo firms. First, because de alio firms are tied to existing customers’ needs (Christensen, 2003) they may experience inertia against innovating new products or services that are espoused by “fringe” collective action organizations (Hoffman, 1999). Second, diversifying incumbents have established routines (Carroll et al., 1996) and may be subject to competency traps (Levitt and March, 1988) that will cause them to disregard feedback from collective action organizations as not being relevant (McCarthy and Zald, 1977b). Third, de novo entrants often undertake collective action to promote the legitimacy of an emerging industry.
themselves, attempting to educate and persuade stakeholders that they offer a normatively superior product (Carroll and Swaminathan, 2000; McKendrick et al., 2003; Swaminathan and Wade, 2001). Thus, they are also more likely to rely on normative legitimacy and because their identity is focused on the emerging, relevant sector, they are more likely than de alio firms to be influenced by collective action supporting the industry.

Hypothesis 3: Collective action supporting an emerging industry will have a greater positive association with entry by de novo (entrepreneurial) firms than with entry by de alio (diversifying incumbent) firms.

While the role of SMOs received some attention in the entrepreneurship literature, the impact of social norms—defined as the unwritten rules of conduct of a group (Elster, 1989)—has been less examined. Social norms may influence entrepreneurial entry through two mechanisms: (1) perception of entrepreneurship as socially desirable and (2) perception of specific entrepreneurial opportunities as socially desirable. Most entrepreneurship research on social norms has looked at the degree to which entrepreneurship is viewed as an esteemed and socially beneficial activity in a region. For example, if entrepreneurs are viewed as “exploitative” in a community, the status of entrepreneurship as a career is lowered, and thus made undesirable as a career choice (Manolova, Eunni, and Gyoshev, 2008). On the other hand, several studies have found that when entrepreneurs are viewed positively in a region, individuals are more likely to seek entrepreneurship as a viable career path (Freytag and Thurik, 2007; Tominc and Rebernik, 2007). However, Krueger and his colleagues’ (2000) study of intention-based models of entrepreneurship found no evidence of a relationship between social norms and entrepreneurial intentions. Thus, the effect of social norms on entrepreneurial entry is ambiguous.

We propose that to understand the role of social norms in entrepreneurial entry, we must better understand their effect on the perception of specific opportunities as socially desirable. To do so, it is necessary to examine entry within industries that have distinct, empirically tractable, sociocultural implications. Prior work has established that environmental social norms differ across regions (Mazur and Welch, 1999; Mazur, 2010) and are influential in individuals’ views of the natural environment (Lubell, 2002); we argue social norms are likely to influence the motivation, and therefore the likelihood, of entrepreneurship in environmentally beneficial industries. In the one study we could locate examining the role of environmental social norms on entrepreneurial entry, Meek et al. (2010) found that social norms of environmentalism were highly correlated with entry in the solar energy industry. However, this work gives no comparison to entry by diversifying incumbents. Further, we could find no studies in the literature on de novo and de alio entrants that examined the role of social norms.

We propose that social norms act as a “pull” that influences potential entrepreneurs to believe not only that they could enter a new field, but that they should enter a new field because it is normatively legitimate and, thus, more likely to succeed. For de novo firms, who focus their identity on the emergent sector, social norms will likely influence entry by (1) enabling recognition of opportunity through changing societal norms, (2) building a social network of similar-minded actors, and (3) providing normative legitimacy for the new venture in their region. Prevalent social norms supporting an emerging industry in a region will likely influence the propensity of potential entrepreneurs to perceive opportunity related to those norms. Recent work has shown that how entrepreneurs view their membership in groups (e.g., environmentalists) drives the types of opportunities pursued, as well as the audiences they engage (Fauchart and Gruber, 2011). Normative legitimacy provided by social norms can act to assure potential entrepreneurs that they are making the “right” choice by founding their new venture, despite a lack of clear evidence of economic opportunity or regulatory support.

While the pull of the social norms and collective action is likely to influence de novo entrants who have higher flexibility (Carroll et al., 1996) and can more easily adapt (Hannan and Freeman, 1984) to changing sociocultural conditions, we propose that de alio firms will be more influenced by the push of economic opportunity and/or formalized incentive policies as outlined in H1 and
H2. Prior work has suggested social norms can impact existing firms (Philippe and Durand, 2011), however, studies in the area of organizations and the natural environment suggest norms are not a driver of firm adoption of environmentally beneficial practices. Rather, adoption has been shown to be often a defensive posture in anticipation of regulatory pressure (Delmas, 2002; King et al., 2005) or to be dependent on endogenous characteristics such as internal awareness (Delmas and Toffel, 2008). Thus, the subtle influence of social norms on entry by *de alio* firms is likely less than on *de novo* firms because: (1) social norms represent a normative, not economic or regulative, assessment and (2) key decision makers within a firm are likely engaged in a myriad of firm-relevant decisions that are not related to the sociocultural environment and are thus embedded within an economic logic (Gladwin, Kennelly, and Krause, 1995).

_Hypothesis 4:_ Social norms supporting an emerging industry will have a greater positive association with entry by *de novo* (entrepreneurial) firms than with entry by *de alio* (diversifying incumbent) firms.

**DATA AND METHODS**

To test our hypotheses, we examined entry into the green building supply industry. We chose this industry for several reasons.\(^1\) First, we sought to identify an industry in which new entrants could be considered to address an environmental issue while simultaneously creating an economically viable business (Lenox and York, 2012). As green building is defined as a process of “design and construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants” (USGBC, 2004), for-profit entrants in this industry meet these criteria. Second, in view of the amorphous nature of social and environmental entrepreneurship, researchers have struggled to construct any reliable records of entrepreneurial entry; the green building supply industry does have reliable and reasonably detailed data along this line, as described in the next section. Third, because we were specifically interested in the impact of the sociocultural environment, it was necessary to identify an issue that is clearly defined, considered important by specific collective action organizations, and is representative of a larger social norm, (e.g., environmentalism). Finally, green building is an emergent, specialized sector within the construction industry that provides opportunity for both *de novo* and *de alio* firms.

A key factor in the emergence of the green building supply sector was the establishment in 1993 of the US Green Building Council (USGBC), a nonprofit organization. Prior to the establishment of the USGBC, the defining characteristics and technology of green building were unclear, and information asymmetries between builders and customers were prevalent. This changed with the release of the USGBC’s Leadership in Energy and Environmental Design (LEED) voluntary rating system in 2000; through achieving LEED certification, building owners could authenticate a building’s environmental profile.

The USGBC has emerged as one of the most influential and successful SMOs in U.S. history, attracting members from a diverse array of fields and countries. As LEED adoption has grown, so has the supply base of firms that provide products and services to support LEED adoption. The ability of general contractors to engage in green building is predicated on a portfolio of green building supply firms being available as subcontractors and suppliers. For example, spray-based organic foam installation requires not only installation materials but also trained technicians and equipment specific to this installation. The emergence of LEED certification and green building has created an opportunity for entrepreneurs and for existing firms to offer new, environmentally superior products and services.

**Sample**

We constructed a unique longitudinal dataset that provides a view of entry in the green building supply sector at the state level. Our window of observation begins in 2000 (the first year LEED

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\(^1\) To ground our understanding of the green building supply industry, the first author engaged in the following field work: (1) volunteered at the 2008 USGBC Greenbuild Conference and conducted informal interviews with merchants, builders, and consultants as well as USGBC employees, (2) attended two LEED charrettes, intensive 1-day kickoff meetings for LEED projects, and (3) attended training and successfully received the LEED Green Associate certification, a first step toward becoming a LEED Accredited Practitioner. This fieldwork informed our data collection strategy and theory.
certification was made available to the public) and runs through 2007 (the last full year for which these data were available). The resulting dataset consists of 400 state-year observations across 50 states and 8 years in models 1–2. Because we were interested in measuring the effects of institutional changes on entry over time and in addressing potential reverse causality, we lagged independent variables in our models by 2 years (Angrist and Pischke, 2009). Therefore we lose 2 years of observations and the final sample consists of 300 state-year observations. Given constraints in the availability of data for our measure of environmental social norms (described below), we test our hypotheses on a sample of 45 U.S. states when utilizing these data, thus leading to a sample of 270 state-year observations in models 3–7. These analyses exclude the states of Nebraska, New Hampshire, Nevada, Rhode Island, and Utah because these states were not included in the General Social Survey (GSS) data from which we measure state-level social norms.

Comparisons of entry in these states suggests that there are no statistical differences between the population-adjusted mean firm entry in green building supply in these states as compared to the rest of the sample (t = 0.10; p = 0.92). We specify models predicting two different dependent variables: (1) entry by de novo environmental entrepreneurs and (2) entry by de alio diversifying incumbent firms.

**Variables**

*De novo and de alio entrants*

For our dependent variables, *de novo* and *de alio* entry, we utilized the GreenSpec directory of green building products and suppliers created by BuildingGreen an independent publishing company focused on promoting green building practices (Building Green, 2007). The GreenSpec directory has been published annually every year since 1999 (with the exception of 2004) and identifies products screened on a criteria including conserving natural resources, saving energy or water, or avoiding toxic emissions. For each product, the directory identifies the firm providing the product, as well as the address of the firm. Following prior studies that have utilized directories as a proxy for entry (e.g., Baum and Singh, 1994; Caroll and Hannan, 2000; Chen et al., 2011), we construct measures of entry by counting the number of new companies listed in the directory for each state-year in our panel.

To identify which firms were entrepreneurial entrants (*De Novo Entrants*), we first engaged in a manual search to identify founding dates of each firm listed in the GreenSpec directory. We were able to locate founding dates for 1,065 of the 2,604 of the unique U.S. firms listed in the directory (41%). To test for systematic differences between those firms for which we located founding dates, and those we did not, we utilized a *t*-test comparing the number of employees for each group (t = 0.20; p = 0.83). Following prior work in entrepreneurship (Evans, 1987; Fritsch and Mueller, 2004; McDougall, Oviatt, and Shrader, 2003; Reynolds, 1987; Reynolds and Curtin, 2009, 2010), which has designated new firms to be those 6–8 years old, we then parsed the data into incumbent firms founded before the year 1994 (6 years prior to the first GreenSpec listing in 2000) versus new entrants founded after 1994. The year 1994 is also significant as the year the USGBC was founded, representing a shift when green building became more nationally known as an emerging sector. Our fieldwork vetted this assumption, as many of the firms we met with had indeed been founded explicitly to offer green building products. Diversifying incumbents, “firms that already existed before entering the focal industry” (Ganco and Agarwal, 2009: 229) had a much longer heritage, as the construction supply industry is not particularly turbulent, barriers to entry are quite low, and firms often diversify into emergent technologies. While these firms did not necessarily create “new” products, we take their listing in GreenSpec as entry into the green building sector.

Of our sample, 351 firms were new entrants and 714 were diversifying incumbents; this ratio is similar to that reported for entry by *de novo* and *de alio* firms in other emerging industries (Khessina and Carroll, 2008). To create each variable, the *De Novo Entrants* measure was coded as the number of new firms (founded 1994 or later) listed in the directory for each state-year in our panel, and *De Alio Entrants* was coded as the number of firms founded prior to 1994 listed for each state-year. Each variable was de-duplicated to show only the first listing of each firm; thus we measure entry, not a cumulative count. Figure 1 shows the concentration (left axis) and entry (right axis) of entrepreneurial and diversifying entrants over the...
Period of our sample across all states. Table 1 provides an overview of the average size, founding year, and subsectors occupied by the two samples.

### Table 1. Size, founding year, and product offerings by entry mode

<table>
<thead>
<tr>
<th></th>
<th>De novo entrants</th>
<th>De alio entrants</th>
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</thead>
<tbody>
<tr>
<td>Average number of employees</td>
<td>445</td>
<td>1737</td>
</tr>
<tr>
<td>Founding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Average founding year</td>
<td>2000</td>
<td>1968</td>
</tr>
<tr>
<td>• Range of founding years</td>
<td>1995–2007</td>
<td>1805–1993</td>
</tr>
<tr>
<td>Percentage in top product categories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Finishes (%)</td>
<td>20.2</td>
<td>16.5</td>
</tr>
<tr>
<td>• Thermal and moisture protection (%)</td>
<td>13.24</td>
<td>13.6</td>
</tr>
<tr>
<td>• Wood and plastics (%)</td>
<td>11.4</td>
<td>10.3</td>
</tr>
<tr>
<td>• Sitework (%)</td>
<td>7.4</td>
<td>11.0</td>
</tr>
<tr>
<td>• Mechanical (%)</td>
<td>6.6</td>
<td>10.5</td>
</tr>
</tbody>
</table>

**Economic environment**

We measure the economic conditions surrounding the emergent green building supply industry with two variables specific to the construction and green building sectors. First, we included a measure of the overall rate of construction in a state by including the number of new commercial building permits issued (*Commercial Construction*) in that region. These data were provided by Reed Construction Data and are available from their website at www.reedconstructiondata.com. Second, we measured economic opportunity specifically in green building by the count of LEED-certified projects in a state during a given year (*LEED Certified Buildings*). The US Green Building Council provided these data directly to the authors.

**Regulatory environment**

Many states have adopted policies to encourage green building. While the majority of state-level...
policies are requirements that state funded or occupied buildings must pursue LEED certification (66%), some states offered economic incentives for green building. For example, Louisiana provides financial support to schools seeking LEED certification; Nevada provides reduced property taxes for LEED-certified buildings; and Oregon provides a “Sustainable Building Tax Credit” for buildings achieving Silver, Gold, or Platinum LEED (Yudelson Associates, 2007). None of these policies were targeted at encouraging entry into the green building supply market, but rather at increasing adoption of green building.

To measure the regulatory environment, we gathered data on 38 state-level policies that supported green building from the Database of State Incentives for Renewable Energy and Efficiency (DSIRE) and from an online database of incentives provided by the USGBC. We then coded each policy into one of two categories: (1) providing regulatory requirements for LEED certification (State Regulatory Policies) or (2) providing economic incentives for LEED certification (State Incentive Policies). Our final variables consisted of the cumulative count of policies in place, by type, in a state-year observation.

Collective action

We operationalize the presence of collective action supporting the green building supply industry through measuring the state-level presence of the USGBC. USGBC Membership is the number of USGBC members in a given state-year. These data were provided by the USGBC and coded as a count variable. To be clear, USGBC membership is not necessary for LEED certification. While some USGBC members have projects that receive LEED certification, the majority of this sample was composed of other groups such as contractors and builders (34.2%), consultants (13.4%), architects (7.7%), engineers (9.6%), nonprofits (5.2%), local governments (3.1%), and a myriad of other organization types including accountants, attorneys, landscape architects, trade associations, and utilities interested in advancing green building and sustainable communities.

Social norms

We utilized a direct measure of the social norm of environmentalism (Environmental Social Norms) taken from the Sensitive Data Files of the General Social Survey (GSS) conducted by the National Opinion Research Council (NORC). The GSS is a multistage, stratified sample of American society with a data-collection program designed to monitor social change within the United States (Davis, Smith, and Mardsen, 2001). It is a widely used social science data source that has been utilized by researchers in sociology, economics, and political science. Some of the social norms examined in prior research include family interdependence and satisfaction (Buchmann and DiPrete, 2006; Kiecolt, 2003), trust and cooperation (Gächter, Herrmann, and Thöni, 2004), cultural conformity (Gibson, 1992; Van der Slik and Driessen, 2005), and environmentalism (Lubell, 2002). For an overview of the GSS survey method and sample please see Davis et al. (2001). We utilized data from the GSS conducted in the years 2000, 2002, 2004 and 2006. The survey consists of a series of questions that measure individuals’ opinions on a variety of topics, including environmental issues. Following prior research in the geography of environmental social norms in the United States (Mazur and Welch, 1999; Meek et al., 2010), we used the following question from the GSS:

We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount.

One of the “problems” described is “Improving and protecting the environment”; we coded responses of “spending too little” as environmentalism and collapsed responses by the median response for the state for each year. We then linearly interpolated the score for missing years using the ipolate command in Stata.

Controls

We control for a number of factors that may drive entry into green building supply. We first
controlled for population effects by including a measure of state population (*Population*). We controlled for the changing overall economic environment in a state using the percent change in gross domestic product (*Change in GDP*). In addition we controlled for state income levels (*Median Income*), as income levels have been shown to impact entrepreneurial entry (Shane, 2004). These data were acquired from the U.S. Census Bureau 2009 Abstract of the United States.

State electricity prices (*Energy Price*) can impact adoption of practices that reduce consumption of power, and thus entry (Sine et al., 2005), therefore we controlled for states’ average retail price with data obtained from U.S. Energy Information Agency. To control for differences in general entrepreneurial activity by state, we rely on a measure of the overall level of entrepreneurship in a state (*Entrepreneurial Growth*). Entrepreneurial growth was measured utilizing the Kaufman Index of Entrepreneurial Activity (KIEA) (Fairlie, 2008). The KIEA measures the percent of individuals (ages 20–64) who do not own a business in the first survey month and then start a business in the following month with 15 or more hours worked. We utilized the annual summary report on state levels of entrepreneurial growth as a proxy for entrepreneurial activity in each state-year. These data are publicly available at http://www.kaufman.org/kaufmanindex.

To control for potential variables that could influence the sociocultural environment to support green building, we include (1) a measure of *Sierra Club Membership*, as it is one of the oldest and most widely recognized environmental SMOs in the United States and (2) a control for the ideology of a state’s political leaders (*Political Ideology*) that measures the average location of elected officials on a liberal–conservative continuum (Berry et al., 1998, 2007). This measure was constructed using the voting of state congressional delegations, the outcome of congressional elections, and the division of state legislatures and the party of the governor (Berry et al., 2007; Lee, 2009). Lastly, we controlled for the effect of *de alio* entry on *de novo* and vice versa to ensure we captured entrants’ effects on one another (*Prior Entry*).

In our final models we controlled for the organizational density of the green building sector (*Field Density*), measured as the log of the total number of green building companies known to exist in a state for the previous year. Variables were scaled as noted to ease interpretation.

**Specification**

Because our dependent variables are count data and residuals from test models violated assumptions of normality required for the ordinary least squares (OLS) specification (Cameron and Trivedi, 1998) and exhibited overdispersion (Hilbe, 2007), we utilize a random effects negative binomial model. We used the random effects model because it takes into account the clustering of observations (in this case, by state) by ensuring that dispersion varies randomly from cluster to cluster (Rao, 2004). We did not adopt a fixed effects model because of concerns about its robustness in a negative binomial setting. Allison and Waterman (2002) have shown that the fixed effects negative binomial model is not a true fixed effects model, as it does not control for all stable covariates. We therefore follow Hilbe’s (2007) recommendation to utilize a different model, in this case, a random effects negative binomial model. In addition, the Hausman test (Greene, 2003) was not statistically significant (p = 0.83), indicating that the random effects specification was appropriate. We included, but did not report the results for, a full set of year dummy variables to account for the unobserved effect of time on our dependent variables.

**ANALYSIS AND RESULTS**

The descriptive statistics and correlations of all of our variables, except year dummies, are listed in Table 1. As could be expected, several of our control variables exhibit very high correlations, including *Population* with *Sierra Club Membership* (0.83) as well as *Commercial Construction* (0.84). Following prior studies that have faced such issues in panel data (Russo, 2003; Sine and Lee, 2009), we reran our analysis, substituting population density (total population/state land mass) as this variable is relatively uncorrelated with our other variables. These analyses were consistent with the findings reported below, suggesting our findings were not the result of multicollinearity. We also tested for multicollinearity and found an average VIF of 3.04 indicating an acceptable level (Chatterjee and Hadi, 2006; Paetzold, 1992). We therefore utilized...
our original measure of population to ensure that we directly controlled for state size effects.

Table 3 shows the estimates from our negative binomial estimates. As a baseline test, model 1 uses de novo entry by environmental entrepreneurs as its dependent variable and includes our control variables. In model 2 we utilize the same control variables but use entry by de alio firms for our dependent variable. We find a significant positive relationship for entry by both de novo and de alio firms and Population \((p < 0.001)\) and Median Income \((p < 0.001)\). We find a significant negative relationship between Change in GDP \((p < 0.10)\) for de novo and \(p < 0.001\) for de alio) and Energy Price and both entry modes \((p < 0.05)\). We also find a significant negative relationship between Sierra Club Membership \((p < 0.001)\) and Entrepreneurial Growth \((p < 0.10)\) with de alio entry. We find a significant positive relationship between Political Ideology \((p < 0.05)\) and de novo entry. Last, we find entry by each mode is positively \((Table 3)\) associated \((p < 0.10)\).

Our next set of models tests our hypotheses by looking at the differential effects of institutional factors on entry by de novo environmental entrepreneurs (model 3) and de alio diversifying incumbents (model 4). For model 3 we find that neither Commercial Construction nor LEED Buildings is significantly related to entry by de novo firms. However, in model 4 we find a significant positive relationship between Commercial Construction \((p < 0.01)\) and LEED Buildings \((p < 0.10)\) with entry by diversifying de alio firms. It appears that for every 1000 commercial building starts in a state, the incident rate of entry by de alio firms is 2.9 times greater. For every additional certified LEED certified building in a state, the incident rate of entry by de alio firms is 1.1 times greater. However, the difference between the coefficients for de novo and de alio firms for Commercial Buildings was not significant \((p < 0.28)\), nor was the difference in LEED Buildings coefficients \((p < 0.21)\). These findings provide partial support for H1, which stated that regional economic conditions in an emerging industry would exert greater influence over entry by de alio than de novo firms.

Turning to the effect of the regulatory environment on entry, in model 3 we find that State Regulatory Policies were not a significant predictor of entry by de novo or de alio firms. State Incentive Policies were not a significant predictor of de novo entry, but they were significantly \((p < 0.01)\) and positively associated with de alio entry. For every incentive-based policy implemented at the state level, the incident rate of de alio entry is 1.5 times greater. However, the difference in coefficients was marginally significant in this comparison \((p < 0.10)\). This finding partially supports H2, which predicted that economic incentives provided by the state would exert greater influence over entry by de alio incumbents than de novo new entrants.

We next turn to our independent variables measuring the sociocultural environment. In model 3 we find that both USGBC Membership \((p < 0.10)\) and Environmental Social Norms \((p < 0.05)\) are positively associated with de novo entry. In model 4, we do not find evidence that USGBC Membership and Environmental Social Norms are drivers of de alio entry. The differences in the pair of coefficients are statistically significant for both USGBC Membership \((p < 0.000)\) and Environmental Social Norms \((p < 0.02)\). Thus, we find support for H3, which stated that collective action would have a greater positive association with entry by de novo than de alio entrants. For 10 additional members of the USGBC in a state, the incident rate of de novo entry is increased by a factor of 1.1. In addition, we find support for H4, which stated that social norms favoring environmentally friendly practices would exert greater influence on de novo than de alio entry. For every increase of one unit in the median environmental norms, the incident rate of de novo entry is doubled.

In model 5 and model 6, we replicate model 3 and model 4 adding Field Density. As expected, this measure is a significant predictor \((p < 0.001)\) of both de novo and de alio entry. We find nearly identical estimates with Environmental Social Norms \((p < 0.05)\), however USGBC Membership \((p < 0.11)\) is no longer significantly related to de novo entry. Commercial Construction \((p < 0.05)\) and State Incentive Policies \((p < 0.10)\) continue to have significant and positive correlations with de alio entry, however LEED Certified Buildings does not \((p < 0.14)\). More critical for our analysis, the differences in coefficients for each of our independent variables of interest is significant and in the expected direction. The difference for Commercial Construction \((p < 0.07)\), LEED Certified Buildings \((p < 0.05)\), and State Incentive Policies \((p < 0.02)\) are each statistically significant, providing support for...
Table 2. Summary statistics and correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. dev.</th>
<th>Min</th>
<th>Max</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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</thead>
<tbody>
<tr>
<td>De novo entrants</td>
<td>0.88</td>
<td>1.43</td>
<td>0</td>
<td>11</td>
<td>0.12</td>
<td>0.18</td>
<td>0.10</td>
<td>0.16</td>
<td>0.09</td>
<td>0.04</td>
</tr>
<tr>
<td>De alio entrants</td>
<td>1.78</td>
<td>3.33</td>
<td>0</td>
<td>34</td>
<td>0.51</td>
<td>0.46</td>
<td>0.41</td>
<td>0.26</td>
<td>0.10</td>
<td>0.13</td>
</tr>
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<td>6,409,222.00</td>
<td>493,032</td>
<td>36,600,000</td>
<td>0.51</td>
<td>0.46</td>
<td>0.41</td>
<td>0.26</td>
<td>0.10</td>
<td>0.13</td>
</tr>
<tr>
<td>Change in GDP</td>
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<td>0.02</td>
<td>-0.02</td>
<td>0.14</td>
<td>-0.04</td>
<td>0.01</td>
<td>-0.03</td>
<td>0.11</td>
<td>0.09</td>
<td>0.33</td>
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<td>Median income</td>
<td>44927.64</td>
<td>7429.98</td>
<td>29359</td>
<td>68059</td>
<td>0.26</td>
<td>0.10</td>
<td>0.18</td>
<td>0.09</td>
<td>0.33</td>
<td>0.26</td>
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<td>Energy Price</td>
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<td>2.69</td>
<td>4.17</td>
<td>21.29</td>
<td>0.05</td>
<td>-0.03</td>
<td>0.11</td>
<td>0.09</td>
<td>0.33</td>
<td>0.26</td>
</tr>
<tr>
<td>Entrepreneurial growth</td>
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<td>9.31</td>
<td>8.166</td>
<td>72.373</td>
<td>0.00</td>
<td>-0.09</td>
<td>-0.09</td>
<td>-0.10</td>
<td>-0.03</td>
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<td>Sierra Club Membership</td>
<td>14593.35</td>
<td>27232.43</td>
<td>435</td>
<td>198,590</td>
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<td>0.40</td>
<td>0.83</td>
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<td>74</td>
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<td>2774</td>
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<td>0.72</td>
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<td>0.07</td>
<td>0.02</td>
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Table 3. Negative binomial model estimates of entry into green building supply

<table>
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<tr>
<th>Dependent Variable</th>
<th>Comparison 1 Controls</th>
<th>Comparison 2 Controls + independent variables</th>
<th>Comparison 3 With field density</th>
<th>Robustness GLM</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Model 1 De Novo Entrants</td>
<td>Model 2 De Alio Entrants</td>
<td>Model 3 De Novo Entrants</td>
<td>Model 4 De Alio Entrants</td>
</tr>
<tr>
<td>Population</td>
<td>0.71*** (0.20)</td>
<td>1.21*** (0.14)</td>
<td>0.15 (0.65)</td>
<td>0.43 (0.28)</td>
</tr>
<tr>
<td>Change in GDP</td>
<td>−5.64† (3.41)</td>
<td>−10.48*** (2.92)</td>
<td>−3.98 (3.49)</td>
<td>−10.63** (3.25)</td>
</tr>
<tr>
<td>Median income</td>
<td>0.04*** (0.01)</td>
<td>0.05*** (0.01)</td>
<td>0.04* (0.02)</td>
<td>0.06*** (0.01)</td>
</tr>
<tr>
<td>Energy price</td>
<td>−0.09† (0.04)</td>
<td>−0.07† (0.03)</td>
<td>−0.09† (0.05)</td>
<td>−0.08* (0.03)</td>
</tr>
<tr>
<td>Entrepreneurial growth</td>
<td>0.25 (0.89)</td>
<td>−1.46† (0.76)</td>
<td>−0.17 (1.07)</td>
<td>−1.09 (0.79)</td>
</tr>
<tr>
<td>Sierra Club Membership</td>
<td>−0.02 (0.39)</td>
<td>−1.02*** (0.29)</td>
<td>−0.03 (0.67)</td>
<td>−0.15 (0.38)</td>
</tr>
<tr>
<td>Political ideology</td>
<td>0.71* (0.31)</td>
<td>0.22 (0.24)</td>
<td>0.66† (0.38)</td>
<td>0.24 (0.27)</td>
</tr>
<tr>
<td>Prior entry</td>
<td>0.04† (0.02)</td>
<td>0.09* (0.05)</td>
<td>0.05* (0.02)</td>
<td>0.09† (0.05)</td>
</tr>
<tr>
<td>Field density</td>
<td></td>
<td></td>
<td></td>
<td>0.66*** (0.12)</td>
</tr>
<tr>
<td>Constant</td>
<td>−1.92** (0.70)</td>
<td>−0.84 (0.54)</td>
<td>−3.74*** (1.02)</td>
<td>−1.78* (0.78)</td>
</tr>
</tbody>
</table>

Year fixed effects: Included

Independent Variables
- Commercial Construction: 0.35 (0.76) 1.08** (0.38) −0.32 (0.43) 0.79* (0.38) −0.19 (0.76)
- LEED Certified Buildings: 0.01 (0.04) 0.05† (0.03) −0.02 (0.03) 0.04 (0.03) −0.06** (0.02)
- State Regulatory Policies: −0.13 (0.21) −0.20 (0.21) −0.03 (0.19) −0.21 (0.21) 0.06 (0.15)
- State Incentive Policies: 0.05 (0.37) 0.43** (0.16) −0.24 (0.23) 0.27* (0.19) −0.11 (0.34)
- USGBC Membership: 0.11† (0.06) −0.11† (0.06) 0.09 (0.06) −0.09 (0.06) 0.16* (0.08)
- Environmental Social Norms: 0.73** (0.22) 0.07 (0.21) 0.67* (0.33) −0.03 (0.22) 0.08** (0.03)

Observations: 300 300 270 270 270 270 270 270
AIC: 733.67 815.62 676.38 752.82 645.76 736.16 NA
BIC: 789.18 871.13 751.87 828.31 724.84 815.24 NA
Wald Chi2: 106.97 161.39 119.55 164.75 152.18 183.42 130.00
Difference in Log Likelihood: NA NA 12.96* 16.05** 32.05*** 14.19*** NA

Population, commercial building, income, architects, tax rate, entrepreneurial growth, and Sierra Club scaled to ease interpretation. Standard errors in parentheses: †p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001.
DISCUSSION

How do the unwritten rules of the game impact the decisions of entrepreneurs and diversifying incumbents to enter a nascent industry? By explicitly linking both collective action and social norms with an emerging sector that produces inherent ecological benefits, we are able to gain a more fine-grained understanding of the differential impact of the sociocultural environment on entry by de novo and de alio firms. In particular, our findings suggest that the sociocultural environment has a greater impact on the rate of de novo entrepreneurial entry than the rate of entry by de alio diversifying incumbents. This finding reinforces the notion that entrepreneurs in socially and environmentally impactful arenas, in this case the green building supply segment, may be driven by the pull of the sociocultural environment while diversifying incumbents are pushed by regulation and economic opportunity. These findings have important implications for our understanding of competition and entry.

Our finding that the economic environment had less impact on entry by de novo firms than the sociocultural environment raises several interesting questions. It could be, as theorized by prior literature (Cardon et al., 2009; Miller et al., 2012), that entrepreneurs who initiate social and environmental ventures simply have greater passion and thus noneconomic motivations for their venture and ignore the economic signals of their environment. While our current data do not allow us to dig further into these differences, this study supports the proposition that environmental and social entrepreneurship may be a rich area of future exploration for the role of affect and identity entrepreneurship (Dacin et al., 2011; Miller et al., 2012; Shepherd and Patzelt, 2011; York and Venkataraman, 2010).

Another result of interest was the correlation between state incentive policy and the entry of de alio but not de novo firms. If state policy merely increases demand for green buildings, and hence the demand for green building supplies, why would entrepreneurial entrants be less affected than diversifying entrants? We propose that diversification decisions by incumbent firms are more highly driven by an economic calculus that relies on the certainty and legitimacy provided by state level economic incentives.

Our finding, that USGBC membership is only significantly and positively related to de novo entry, raises two interesting points. First, the results are consistent with prior findings that de novo firms have a focused identity (Khessina and Carroll, 2008) that is highly aligned with the emerging industry. Our study suggests this focal identity may signify a commitment to the normative ideology (and legitimacy) offered by adjacent SMOs. Second, while prior studies have shown that resource partitioning theory can provide an explanation for SMO specialization (Soule and King, 2008) we could find no studies that looked at the impact of such specialization on firm entry. Recent studies have suggested that more specialized SMOs, who focus on a specific industry, may have a greater impact on encouraging entrepreneurial entrants than that of more generalist SMOs, such as the Sierra Club (Pacheco, York, and Hargrave, Fortchoming; Pratt...
and Kraatz, 2009). Thus, focused identity may create a synergistic impact between nascent SMOs and nascent firms.

Perhaps our most interesting finding is the strong, persistent positive association between environmental social norms and entry by de novo environmental entrepreneurs. Our findings imply that social norms exert an influence above and beyond that of social movements and a greater influence on environmental entrepreneurs than economic or political conditions in a region. One could reasonably argue that our findings may be constrained to contexts that have distinct environmental or social implications. While this could be a boundary condition to our findings, it is likely that in industries that do not have the clear support of social norms or social movements, entrepreneurial firms fill the gap by acting collectively to create normative and cognitive legitimacy for the emergent sector (Scott, 2010). We suspect such activity would be especially prevalent when firms enter on the periphery of an established industry, as predicted by resource partitioning theory (Carroll, 1985) and develop strong focal identities that allow collective action to take form. Such relationships have been noted in the microbrewing (Carroll, 1985), nouvelle cuisine (Rao, Monin, and Durand, 2003), and automobile (Rao, 2004) industries. Future studies could examine the impact of social norms in moderating efforts by entrepreneurs to engage in such collective action, as well as examine the impact of other social norms, such as conformity, or valuing education, on entry. Sectors such as alternative health care, local foods, and midwifery could offer potential areas for looking at the effect of a variety of social norms.

This study has some limitations. First, because we focus exclusively on the green building supply sector, the generalizability of our findings may be limited. Second, our sample is not a comprehensive view of the green building supply sector. Our field research indicated that collecting such a comprehensive dataset is simply not possible for this emergent and diverse industry. However, given the history of utilizing directories (i.e., Baum and Singh, 1994; Caroll and Hannan, 2000; Chen et al., 2011; Lu and Beamish, 2001) as a proxy for entrepreneurial entry, verification through field interviews with industry participants and the unique nature of our dataset, we are confident that we have captured a representative sample. Third, our sample only covers 8 years (six with lags) of entry into the green building sector. It would be interesting to see how the U.S. real estate collapse in 2008 affected the fates of these firms; did sociocultural legitimacy act as a resource for firms to survive challenging economic conditions? While our findings show provocative patterns regarding entry, we can say little about long-term performance (Ganco and Agarwal, 2009); nor do we capture the entire population of potential de alio entrants. Do de novo firms reacting to the sociocultural environment increase their odds of survival, or does ignoring the economic and political environment misguide them? Do de alio firms ignore evolving social norms at their peril? What factors drove some de alio firms, but not others, to enter green building? We leave these questions to future research.

For entrepreneurs, our study suggests that entering a region that is culturally aligned with a new venture does not necessarily imply direct competition from incumbents, whereas focusing on economic and regulatory opportunity may. Entrepreneurs may be able to circumvent direct competition with incumbent firms by entering areas before the opportunity is clarified through policy by relying on an understanding of social norms in a region. While the industrial organization literature has traditionally found that de novo firms face challenges in establishing legitimacy (Stinchcombe, 1965) and retaliation by incumbents (Fan, 2010), our findings suggest that by paying attention to the social norms of a region, entrepreneurs may avoid incumbent rivalry. For diversifying firms, our study suggests that a greater awareness of the sociocultural environment could help to predict new entrants and allow incumbents to maintain a competitive edge. Finally, for policymakers, our findings suggest that state-level policies may not be the most effective mechanism to encourage entry by new firms; rather, fostering a regional culture aligned with an emergent industry may spur greater levels of entrepreneurship.

CONCLUSION

This study adds to the extant literature on de novo versus de alio entry and provides new insight into the nascent literature on social and environmental entrepreneurship. As we seek to discover the impact of the sociocultural environment on entry, socially and environmentally relevant
entrepreneurship provides us with a rich setting to tease out these elusive relationships. This study broadens the extant literature by showing that it is important to examine not only the potential effect of entrepreneurship on society, but also the effect of social forces on entrepreneurial entry by both new and diversifying firms.

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