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# Achieving High Growth in Policy-Dependent Industries: Differences between Startups and Corporate-Backed Ventures

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This research examines which firms achieve high growth in policy-dependent industries. Using the European solar photovoltaic industry as our empirical setting, we investigate the impact of policy support on the growth of independent startups and corporate-backed ventures operating across countries with diverse policy conditions. We find that producers' growth is positively linked to policy generosity, and negatively linked to policy discontinuity. Moreover, corporate-backed ventures are less affected by policy generosity compared to entrepreneurial startups, and less impacted by policy discontinuity as well. Our results underline the importance of country- and firm-level differences in analyzing firms' response to regulatory policies, and point to the need for a better understanding of the unintended consequences of policies designed to support new industries.

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## Introduction

How can firms achieve high growth in a changing environment? Understanding high growth firms, and organizational growth more generally, has been a subject of a substantial body of research. The general tendency has been for entrepreneurship research to focus mostly on individual differences in the experience, skills or aspirations of founders, and strategy scholars to emphasize firm differences such as size, age, ownership structure or resources (Baum and Locke, 2004; Clark et al., 2001; Eisenhardt and Schoonhoven, 1990; Mishina et al., 2004; Wiklund, 2001). Dimensions of the external environment have also been investigated, with industry maturity, level of competition, dynamism, innovativeness and macroeconomic conditions being among the most frequently studied factors found to explain high growth (Coad, 2007; Davidsson et al., 2010; Eisenhardt and Schoonhoven, 1990; Zahra and Bogner, 2000). However, in a recent review, Wright and Stigliani (2013) suggest that the contextual dimensions that shape firm growth may be more varied than previously thought. Moreover, prior studies have tended to examine growth by entrepreneurial ventures or by established organizations separately; little research has studied how these two types of ventures differ in their growth rates after entering new industries (cf. Shrader and Simon, 1997).

This study attempts to address these limitations by examining how startups and diversifying entrants can achieve high growth in an industry where the importance of contextual dimensions, particularly public policy interventions, is paramount. After briefly discussing the role of public policy in the emergence of the clean energy sector, we develop and test hypotheses on a sample of European solar photovoltaic producers to understand the role of policy generosity and discontinuity in determining which ventures will achieve high production growth. We then examine how these two factors differently influence the growth of startups and corporate-backed ventures (Carroll et al., 1996; Khessina and Carroll, 2008; Sosa, 2013). Our results raise the need for a more explicit consideration of the policy environment within strategic management research (Lazzarini, 2015), and for a more nuanced understanding of the intended and unintended consequences of policy intervention designed to support the development of certain industries (Haley and Schuler, 2011; Hoppmann et al., 2013; Marcus et al., 2011).

The remainder of this paper is organized as follows. In the next section we focus on the impact of public policy on the clean energy sector, and particularly the setting of this study: the European solar photovoltaic (PV) industry. We hypothesize that high growth among solar PV producers is partly an outcome of policy intervention in their respective countries, and that the effect of policy characteristics depends on the ventures' organizational prehistory (Sosa, 2013). In the section that follows we provide a description of the setting and the data used to test our hypotheses, and then describe the models and results. We then outline the contributions of this study to strategic management research and to the literature on regulatory uncertainty, and discuss managerial and policy implications. Finally, we conclude by considering how some of the findings but also some limitations of our study offer opportunities for future research.

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## Background and hypotheses

### *Policy intervention and growth of the clean energy sector*

The government's role in shaping the business environment is pervasive (Lazzarini, 2015) and various aspects of government intervention have been examined by prior studies. Some scholars have emphasized institutional factors that can shape economic activity across economic sectors, such as intellectual property rights, taxation, labor market legislation, or financial and legal obstacles to business creation (see for instance Coad, 2007; Davidsson and Henrekson, 2002). Others have examined sector-specific or activity-specific government interventions, including the enactment of antitrust laws, deregulation, privatization, command-and-control or incentive-based regulation, or different forms of industrial policy (e.g. Delmas et al., 2007; Dobbin and Dowd, 1997; Peters et al., 2012; Rugman and Verbeke, 2002; Russo, 1991; York and Lenox, 2014).

The goal of policy intervention is, in many cases, the development of particular technologies and the promotion of specific economic sectors. The most emphatic recent example of industrial policies, policies "promoting productive investments in a way that would not occur in market interactions free of such interventions" (Lazzarini, 2015) can be found in the clean energy sector. In their efforts to reduce energy dependency or promote innovation and in the face of mounting sustainability concerns, governments throughout the world have established support schemes that promote the diffusion of renewable energy sources (Blok, 2006; Flamos et al., 2009; Peters et al., 2012). According to a recent report (REN21, 2012), at least 65 countries worldwide had a feed-in-tariff policy<sup>1</sup> in place by 2012, and a total of 109 had established some form of renewable power policy. Such incentive-based policies have been extremely successful in bringing these technologies to the market and inducing demand for renewable energy. However, despite ample evidence that public policy in general (Lund, 2009), and feed-in-tariffs in particular (Flamos et al., 2009; Jacobsson and Lauber, 2006), have shaped the evolution of the clean energy sector, we know very little about how these policy schemes influence firms' investments in these industries.

Studies generally examine the impact of industrial policy initiatives on an aggregate level, typically the country or the state. For instance, Sine et al. (2005) and York and Lenox (2014) found that policies increased entry rates in the independent wind power sector and the green building industry, respectively, across US states. Peters et al. (2012) recently studied the impact of demand-pull and technology-push policies on innovation in the solar photovoltaic sector, focusing particularly on how these types of policies foster innovative output across different countries. Students of energy policy have assessed the effectiveness of different measures used for the promotion of clean energy, with the main focus being their impact on adoption at, again, the country level (e.g. Blok, 2006; Campoccia et al., 2008; Flamos et al., 2009; Lund, 2009). Little attention has been paid to actors that may indirectly be affected by these policy schemes. For instance, while deployment policies such as feed-in-tariffs are set up to induce demand for solar energy, there is little doubt that they also have an influence on manufacturers of solar equipment. Because feed-in-tariffs are one of the most, if not the most, important driver of demand for solar cells (Flamos et al., 2009; Hoppmann et al., 2013), they offer producers the opportunity to grow to meet that demand. That is, even if the policy incentives are offered at a different stage in the value chain (see below for more details on the setting), they can have a strong impact on producers of solar PV equipment. Importantly, these producers compete internationally, yet they face substantially different policy environments in the countries where they operate. How are, then, these firms influenced by such divergent regulatory conditions?

Inarguably, high growth is one of the main strategic outcomes to be expected by firms facing policy support, as such growth is most often realized in growing markets (Eisenhardt and Schoonhoven, 1990; Gilbert et al., 2006). *But which firms achieve high growth when the market is induced and largely dependent on policy support?* This is the main question we ask in this paper. Our goal is not to make universal claims about firm growth. Rather, it is to uncover determinants of high growth in policy-dependent industries: industries that would not exist or would have developed to a much lesser extent absent government intervention. Policy support, we argue, creates unique challenges for managers operating in these sectors. On the one hand, increased demand calls for rapidly growing firms; on the other hand, since this demand is 'artificially' created by policy-makers and policy support varies across countries and time periods, the future viability of firms' investments is uncertain. Thus, policy support confers both opportunities and threats for firms operating in policy-dependent industries.

### *Policy generosity and policy discontinuity in solar PV*

Perhaps the most striking example of a policy-dependent industry is the solar PV sector (cf. Haley and Schuler, 2011). Global investment in solar energy in 2012 was \$140.4 billion, and the world's newly installed solar PV capacity grew in that year by 41%, reaching a cumulative capacity of more than 100 GW.<sup>2</sup> Until 2011, the industry was exhibiting double digit growth rates almost every year since at least the mid-90s.<sup>3</sup> It is indicative that in one of its worst years (2009), the PV industry grew by "only" 25% (Mehta, 2010). This rapid growth has rendered solar PV the fastest-growing renewable technology

<sup>1</sup> The Feed-in-tariff is the most widely used policy in the alternative energy sector; with this policy governments guarantee producers of clean power a fixed price (tariff) per unit of electricity that is fed into the grid, typically for a predetermined number of years (REN21, 2012).

<sup>2</sup> [http://www.photon.info/photon\\_news\\_detail\\_en.photon?id=79109](http://www.photon.info/photon_news_detail_en.photon?id=79109).

<sup>3</sup> Own analysis, based on worldwide solar cell production data reported in annual surveys of PV News.

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