The Downside of Social Capital in New Industry Creation

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abstract

In this article we develop and test the hypothesis that social capital, defined as a regional characteristic, discourages entrepreneurship in a new and contested industry. The argument follows the logic that high levels of social capital reinforce conformity in values and ideas, and inhibit deviant entrepreneurial activity. Once an industry becomes more legitimized—as a result of an increase in the number of firms present in a region—social capital becomes less restrictive on entrepreneurship and can even have a positive effect on the subsequent number of firms founded in a region. We find evidence for our thesis using data on 1,684 firm entries in the US video game industry for the period 1972–2007.

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Acknowledgments

Where do new industries come from? Economic geographers today tend to take up this question from an evolutionary approach angle (Martin 2010) by analyzing to what extent a region's new industries are related to a region's preexisting industries. Evidence indeed suggests that most industries emerge in regions where related industries were already present (Neffke, Henning, and Boschma 2011; Boschma, Minondo, and Navarro 2013). This can be explained at the microlevel by the success of spin-offs or diversifying firms, that can leverage their preentry experience in related industries, compared to entrepreneurs and firms with little or no experience (Klepper 2002), and at the mesolevel by the externalities from the local presence of related industries (Boschma and Wenting 2007).

Though the regional knowledge base may channel the opportunities for new industries to emerge, a neglected aspect in the evolutionary theory of new industry creation holds that new industry creation is often accompanied by controversy and conflict. Scholars from institutional sociology, instead, have stressed the pivotal role of the social legitimation processes in new industry creation by explaining how such processes support new business ventures and other organizations. Building on the seminal work of Meyer and Rowan (1977) and Hannan and Freeman (1989), a key argument in this literature is that organizations that are radically new—either by virtue of their new activity or by virtue of their new organizational design—are challenged to persuade a range of audiences of the value of their claim to innovation.[1] As radically new organizations threaten the status quo, gaining legitimacy is far from easy. Fiol and O'Connor (2002) rephrase this argument as a question: why would social actors organized in groups ever embrace new ventures that threaten the beliefs and assumptions that constitute the *glue* that ties them as a group?

One of the main findings in the literature on the legitimation of new ventures—and a partial answer to the question above—holds that in the early stages of a new industry, firms are more likely to enter an industry if other firms have already done so.

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[1] Audiences are "collections of agents who possess an interest in the producers or their products and who control important material and symbolic resources the producers need to thrive. Relevant audiences generally include diverse types of agents, such as potential consumers, investors, and employees, as well as certification agencies, government institutions, critics, and analysts" (Hsu, Hannan, and Koçak 2009, 152). See also Hsu and Hannan (2005).

Although this finding helps us to understand a major part of the *emergence puzzle* by stressing endogenous self-reinforcing forces, the question of how the initial firms were able to enter the new industry in the first place—and set the stage for the following cohorts—remains an open one. Starting up a new venture requires knowledge, venture capital, and other resources; and these resources are often provided by geographically proximate sources (Armington and Acs 2002; Sorenson 2003). It has been argued that the extent to which entrepreneurs are able to access resources needed to start their venture depends on the social capital available in the region. Following Putnam (1995, 67) who defines social capital as "features of social organization such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit" our task is to examine how social capital relates to entrepreneurship, and more specifically to the creation of new industries and their development over time.

Defined as a property of a local community and characterized by the density and intensity of spatially bounded relations, social capital is expected to support regional development by facilitating cooperation for innovation and providing a support structure for entrepreneurs (Westlund and Bolton 2003). Despite the support that social capital can provide for entrepreneurs in general, we argue that it is more likely that social capital hampers locally the creation of *new* industries. New industries are likely to be characterized by controversies because established norms and values are being challenged, and vested interests in substitute industries are being threatened. Moreover, with social capital comes conformity bias within tight groups, both regarding values and ideas, which may form a barrier for venture creation in new industries. Our arguments explicitly relate to social capital as defined as a regional- and community-level characteristic and hold that a dense regional community network characterized by high levels of social capital is likely to withhold entrepreneurs in new and contested industries from support.[2] Once an industry becomes legitimized—resulting from an increase in the number of entrepreneurs in a region who become active in this industry—the less contested the new ventures in this industry will become and the less restrictive social capital will be on new firm foundings. That is, social capital is expected to discourage the regional entry in new contested industries, while it is expected to promote regional entry in established and legitimized industries later in the industry's evolution.

The context of our study is the US video game industry. This industry provides an excellent setting to study legitimation processes, because, historically, the industry has been entrenched with controversies, public debates, and lack of legitimation, *and* because the production of video games constituted a radical departure from other industrial activities. Combining narrative information on historic events within the industry and detailed information on the spatial founding rates of new firms allows us to provide a fine-grained analysis of the legitimation processes at work starting from the emergence of the industry in 1972. Hence, by parsing out the historic interaction of producers of video games and its regional audience, the remainder of this article explores how new ventures that threaten the beliefs and assumptions that constitute the basis of social order in a region become legitimized and can thrive.

The article is organized as follows. In the next section, we develop our theory regarding the role of social capital in the creation of new industries. This is followed by a section in which we describe the video game industry. Then we describe the research design and data used in this study. We then explain our methodology, and the penultimate section presents the results from our empirical study. In the final section we summarize and conclude.

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[2] We do not argue that social networks cannot positively relate to entrepreneurship in new industries, and our aim is not to scrutinize the idea that the social microstructure in which an entrepreneur is embedded has a positive impact on entrepreneurship (Elfring and Hulsink 2003; Burt 2005).

Social Capital, Entrepreneurship, and the Creation of New Industries

Since Putnam (1993) popularized the concept of social capital, its blessings for regional and national economic development have been widely embraced by policy makers and academics alike, leaving these blessings largely uncontested. Putnam (1995) postulates social capital as a positive property of a community (typically geographically bounded) that is expected to support regional development by reducing transaction costs, pacifying social conflicts, facilitating cooperation for innovation, and—related to our particular focus in this study—by providing a support structure for entrepreneurs.

Coleman, another scholar who contributed greatly to the understanding and popularization of the concept of social capital, also stressed the benefits that social capital can bring to societies. However, he also noted that "social capital (…) not only facilitates certain actions; it constrains others" and that "effective norms in an area can reduce innovativeness in an area, not only deviant actions that harm others but also deviant actions that can benefit everyone" (Coleman 1988, S105). Portes (1998) argues that these downsides have been largely overlooked as scholars tend to equate social capital and the ability to draw on resources through social networks with the quality of such resources. Even if social capital within a community is high, this does not imply that the resources that are percolating through social networks are necessarily valuable. In fact, given that social capital creates demands for conformity in ideas and values following from group participation and social control, the resources that group members can access may well be redundant and of little relevance for starting a new venture, let alone ventures in new industries (see also Levitte 2004; Florida, Mellander, and Stolarick 2008; Echebarria and Barrutia 2013). Following this line of reasoning, social capital within a regional community may be a limiting factor on the success of new business initiatives by its members (Westlund and Bolton 2003). That is, excess social capital may well discourage entrepreneurship as "less diligent members enforce on the more successful all kinds of demands backed by a normative structure. For claimants, their social capital consists precisely of privileged access to the resources of fellow members" (Portes 1998, 16).

The possible positive and negative effects of social capital on regional development may well underlie the disappointing return on the massive investment in empirical research (Staber 2007). In a typical research design, indicators of regional development, such as growth in domestic product, innovation rate, or new venture creation, are regressed on indicators of social capital while controlling for other determinants like human capital, investment, and accessibility. As a review by Westlund and Adam (2010) shows, this strategy has led to results that are far from conclusive. After Putman's (1993) own study, only four out of nineteen studies found unambiguous positive effects of social capital on regional development.[3]

Thus, there are both theoretical and empirical arguments that suggest that the effect of social capital on regional development is not as straightforward as Putnam (1993) suggests.

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[3] The confirmative studies concern a study on growth in per capita gross regional product for Italian regions (Helliwell and Putnam 1995), a study on EU regions (Beugelsdijk and Van Schaik 2005), and on US regions (Dincer and Uslaner 2010) using various regional development indicators, and a study on EU regions focusing on innovation (Akcomak and Ter Weel 2009). By contrast, two other studies did not find any positive effect of social capital on regional economic development—one on US states (Casey and Christ 2005) and one on Indonesian districts (Miguel, Gertler, and Levine 2005). The remaining thirteen studies reviewed by Westlund and Adam (2010) all found mixed results within a single study, with some regressions showing positive effects and others negative or insignificant effects of social capital on regional development.

If, indeed, social capital can have both beneficial and detrimental effects on regional development, our task is to understand *under what conditions* social capital is beneficial and *under what conditions* it is detrimental (Burt 1997; Murphy 2006; Staber 2007; Malecki 2012). Since the dangers of social capital lie in the conformity bias within tight groups, both regarding values and ideas, a natural extension of social capital theory is to argue that social capital is expected to hamper radical innovation and the creation of *new* industries, while it is expected to be supportive of incremental innovation and the promotion of *established* industries. This is not to say that we expect that social networks solely play a negative role when entrepreneurs create new industries (Hite and Hesterly 2001). On the contrary, social networks, as defined by direct linkages between entrepreneurs and supportive resources, such as investors, potential employees, and real estate suppliers, tend to increase the likelihood of firm founding and the likelihood of firm success (Ruef, Aldrich, and Carter 2003). Rather, our argument is based on a higher level of social structures largely exceeding an entrepreneur's ego network. Hence, this study fits into the tradition that defines social capital as a regional characteristic rather than at the level of microstructures or ego networks (Portes 1998).

The thesis that we advance in this study holds that the more social capital is present in a region, the less likely entrepreneurship will venture into new industries. The underlying idea of our thesis is that deviant entrepreneurial behavior is less accepted in communities with strong social capital. This line of argumentation also implies that once an industry becomes more organized and interwoven with local communities—resulting from more entrepreneurs becoming active in this industry—the less contested new ventures in this industry will be, and the less restrictive social capital will become. That is, social capital is expected to discourage entry in new contested industries, while social capital is expected to promote entry once such industries become more established and legitimate. As a new industry continues to grow over time, the net effect of social capital on entrepreneurship can even change from a negative into a positive effect as the benefits of social capital for legitimized ventures start to outweigh its detrimental effects, provided that the existing stock of firms in the new industry passes a critical threshold.[4]

New venture creation and its relation to the existing stock of firms (also known as firm density) has been one of the key topics in the field of organizational ecology. Organizational ecologists study the formation of new industries by explaining entry rates at one moment in time by the regional density of firms already present in a region (Sorenson and Audia 2000; Cattani, Pennings, and Wezel 2003; Bae, Wezel, and Koo 2011). What we add to this framework is social capital, which we study both in terms of its direct effect on founding rates and how its effect is moderated by regional density.

On a methodological note, looking at social capital in the context of the emergence of a single new industry allows us to circumvent a recurrent problem of endogeneity in social capital research: social capital may not only support regional development, but it may also be an outcome of regional development (Portes 1998; Westlund and Adam 2010). When one analyzes new venture creation in a single industry, one can safely assume that the failure or success of a region in this industry in terms of new venture creation is unlikely to alter the (regional) stock of social capital.

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[4] This thesis is in line with DiMaggio and Powell (1983) who state that the more firms entering a new field, the more likely it is that representatives of these firms will become involved in local associations. This in turn will allow them to better organize their new field and influence the public opinion about the new firms' activities for the benefit of these firms.

The Video Game Industry

Our empirical setting concerns regional entry in the US video game industry. We feel that this industry is particularly suited to test our hypothesis, as entry in this industry was regarded as deviant and nonconformist partly because video games as commodities for children were argued to have negative effects on the well-being of its consumers. Yet, even if our thesis applies especially well to the specific case of the game industry due to its contested cultural and social value, in general new industries seem to be socially contested in their early stages, as documented for industries as varied as life insurance (Zelizer 1979), bikes (Bijker 1995), adult entertainment (Hanna 2005), wind energy (Sine and Lee 2009), and ready-to-wear fashion design (Wenting and Frenken 2011). This suggests that our thesis may be applicable to a wide range of industries and across different times and nations.

The video game industry emerged in 1972 with the introduction of the Magnavox Odyssey. While this revolutionary video game console for home entertainment was a commercial success, extremely high levels of growth in the industry were not achieved until the end of the 1970s with the introduction of the Atari 2600. Games, such as Pac-Man and Space Invaders, became instant hits. During the first half of the 1980s, the Nintendo Entertainment System was introduced with video games Donkey Kong and Mario Bros as big hits. Nintendo was able to continue its dominance as a console manufacturer through the success of the Super Nintendo Entertainment System. In the early 1990s, Sony entered the market and secured a leading position due to its successful game machines: the Playstation and the Playstation 2. The current generation of video game consoles is characterized by heavy competition between Sony, Nintendo, and Microsoft.

Figure 1 shows the entry and exit of the video game producers in the US video game industry throughout the history of the industry (data sources are discussed below). The figure shows that the video game industry grew rapidly until 1994 after which the population of firms stabilized. After 1994 two smaller peaks in the population can be observed. Both the
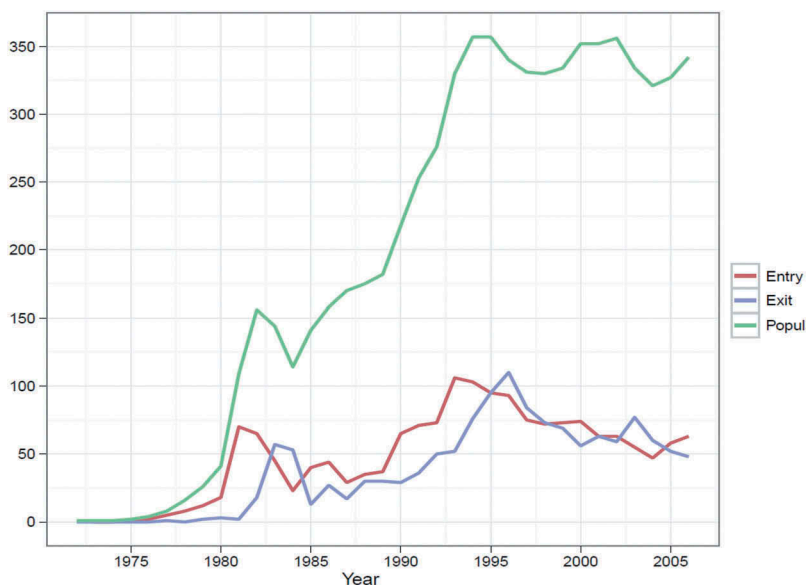
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Figure 1. Entry and exit in the US video games industry.

peak around 2000 and the peak around 2007 coincide with the introduction of two US-produced computer platforms: the Microsoft Xbox and the Microsoft Xbox 360.

Though commercially a huge success, video games are and have always been contested as a commodity. Various politicians and interest groups have been strong opponents of video games and its producers, and the industry is still the target of a large antivideo game lobby among which Jack Thompson—a former attorney who was disbarred in 2008—is one of the most well-known figures. The contested nature of video gaming is not a phenomenon that is present solely in the US. Although China is probably the country with the largest consumer base for video games, gaming consoles are banned by the government and popular computers like Microsoft's Xbox are not officially sold in China.

The high level of contestation of video games as commodities has mainly been caused by two factors (Kent 2001). One reason why video games were contested stems from the strong association of the video game industry with the arcade industry. Nearly all of the early video game companies, including Atari, Gottlieb, and Williams, were founded by entrepreneurs who were previously active as producers of arcade equipment such as pinball machines (Kent 2001), suggesting that the two industries are indeed related in terms of the underlying knowledge base. Arcades and pinball machines were extremely profitable, but they were strongly associated with gambling, the mafia, and other criminal activities.[5] As a result, video game start-ups had trouble getting access to financial capital.[6]

A second factor causing the critical stance toward video gaming relates to the proclaimed negative effect of playing video games on children. These concerns with the new industry came from parents and teachers. Throughout the 1980s, video games became very popular among children, and both parents and teachers accused the industry of keeping their children inside the house and away from school work,[7] causing them to underachieve at school,[8] become physically unfit, and develop aggression as a result of playing violent games.[9] Up until today, the question whether playing video games has negative externalities on children remains an important topic for research (Anderson et al. 2010; Calvert et al. 2017).[10]

The continuous stream of critical issues related to video games raised in various media has acted as a force undermining the widespread acceptance and legitimacy of video game ventures. The act of founding a new venture in the video game industry business, then, challenged dominant social norms, rules, and codes. While over the

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[5] Kent explains this association as follows: "There was a certain amount of skill involved, but basically the law looked at it like a gambling device. Pay-outs started out legally in many states and eventually ended up being operated mostly illegally in places where the police would look the other way" (Kent 2001, 5).

[6] For example, when Nolan Bushnell, the founder of Atari, sought investment in his business, he was turned down by many banks, after which Wells Fargo agreed to provide him with $50,000, only a fraction of the amount asked for by Bushnell (Kent 2001).

[7] Wasting time, *New York Times*, January 24, 1982, 18.

[8] SAT scores decline; verbal skills blamed, *USA Today*, August 28, 1990, 1A.

[9] Video games for the "basest instincts of man," *New York Times*, January 28, 1982, 22.

[10] These negative externalities of playing video games have spawned a broad stream of research from various academic disciplines. Early studies include Harris and Williams (1985) who investigated the effect of playing video games on school performance and Segal and Dietz (1991) who examine the physiologic responses to playing video games. Griffiths (1999) conducts a meta-analysis on the relation between playing video games and aggressive behavior. Among other findings, he reports a study by Lin and Lepper (1987) who study the relationship between the amount of (arcade) video game play and aggressiveness among nine- to eleven-year-olds and found a positive and significant relationship. This line of research emerged in the 1980s but continues to keep academics motivated to further explore the topic.

recent decades, entrepreneurship in the video game industry may have become more institutionalized and accepted, it could well be that the levels to which this is accomplished are spatially bounded. We argue that therefore, this industry provides a suitable context to test our hypothesis that regions with more social capital will initially be less likely to see entry in a contested business like the video game industry.

A first look at the main clusters in the US videogame industry indicates that the geography has been a distributed one throughout its history. Over time, San Francisco and Los Angeles grew to become the main clusters, while New York and Seattle also hosted sizeable clusters. This distributed geography marked a structural break with the past when the electromechanical arcade business was highly concentrated in Chicago, hosting all four leaders in that industry (Gottlieb, Williams, Bally/Midway, and Chicago Coin) (Ernkvist 2008). Some of these companies, particularly Williams and Bally/Midway, successfully diversified from electromechanical arcade games into digital arcade games. Yet, this segment only flourished in the early 1980s and was superseded by the home gaming segment later on (Williams 2004; Ernkvist 2008). Over time, San Francisco and Los Angeles became the main centers in home gaming. Thus, the video game industry can be considered a truly disruptive technology causing industry leaders, and their geographic cluster, to decline, and start-ups—both from the US and from abroad—to take over the industry's leadership.

Data Sources

The analyses in this article are based on a data set that contains information on firms that developed or published one or more computer games from the inception of the industry in 1972 to the end of our data set in 2007. The data is a subset of the data used by De Vaan, Boschma, and Frenken (2013) in their worldwide study on firm survival. The data contain information on the entry year, exit year, and location of video game developers and publishers.[11] Using this data, we can count the number of entries in each region and in each year as well as the total number of existing firms active in a region in every year (which is given by the cumulative number of entries minus the cumulative number of exits). Note that in case of a merger or an acquisition, an exit is recorded in the region that loses the headquarters of the firm that has merged or has been taken over.

The data are a compilation of various data sources. The starting point was the Game Documentation and Review Project Mobygames.[12] The Mobygames website is a comprehensive database of software titles, and covers the date and country of release of each title, the platform on which the game can be played, and the name of the publisher and developer of the game. The database goes back to the inception of the industry in 1972, and the project aims to include all games that have ever been developed and published in the video game industry. To obtain data on entry, exit, and

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[11] The production of a video game involves a publisher and a developer. Developers "are charged with the creative development of a game code" (Johns 2005, 169), while publishers manage and fund the project. Essentially, developers provide programming skills, artistic inputs, and insights on the gameplay, while publishers provide project management, market insights, marketing skills, and financial capital (Tschang 2007). The production of a video game is similar to production processes in other project-based industries, such as the pharmaceutical industry and the advertising industry, in which each project member temporarily takes up a specific task.

[12] The Game Documentation and Review Project Mobygames can freely be consulted at http://www.moby games.com. The Mobygames database is a catalog of "all relevant information about electronic games (computer, console, and arcade) on a game-by-game basis" (http://www.mobygames.com/info/faq1#a). The information contained in the MobyGames database is the result of contributions by the website's creators as well as voluntarily contributions by Mobygames community members. All information submitted to MobyGames is checked by the website's creators, and errors can be corrected by visitors of the website.

location of firms and to control and monitor the quality of the Mobygames data we also consulted the German Online Games Datenbank.[13] This online database is complementary to the Mobygames database in that it provides more detailed information on the location of companies. By combining the Game Documentation and Review Project Mobygames and the Online Games Datenbank, we were able to track down 1,684 firms and 373 subsidiaries.[14]

In addition to firm-level data, we collected data to describe the social capital at the regional level from publicly available resources. We collected information on the regional number of charitable organizations and associations, the regional census response rate, the regional voter turnout, and a variety of population statistics. These data were provided by the Bureau of Economic Analysis (BEA), the US Census Bureau, the National Center for Charitable Statistics, Dave Leip's Atlas of US Presidential Elections, and the Organization for Economic Cooperation and Development (OECD). We will further elaborate on these data in the description of the variables used in this study.

The units of analysis throughout this article are economic areas as defined by the BEA. "BEA economic areas (BEA EA) define the relevant regional markets surrounding metropolitan or micropolitan statistical areas. They consist of one or more economic nodes—metropolitan or micropolitan statistical areas that serve as regional centers of economic activity—and the surrounding counties that are economically related to the nodes. These economic areas represent the relevant regional markets for labor, products, and information. They are mainly determined by labor commuting patterns that delineate local labor markets and that also serve as proxies for local markets where businesses in the areas sell their products" (Johnson and Kort 2004, 68). These regional boundaries—as identified by the BEA—have also been adopted by the OECD and divide the US into 177 comparable regions.

Methodology

The regional founding process of firms in the US video game industry can be divided into two separate processes: one process that describes whether a region receives a firm that enters the video game industry and a second process that determines whether a region receives additional firms given that it has already received an entering firm. Naturally, some regions simply do not have a single entrant during the period of observation, which in our case holds true for eighty-six regions, that is, 49 percent of the total number of regions. One may argue that these two processes—receiving a first entrant and receiving a series of subsequent entrants—follow a different logic, and we therefore estimate the values for the parameters of two different regression specifications: one equation that specifies the duration until the first firm enters a region and one equation that specifies the arrival rates of new video game producers at the regional level given that at least one firm has already entered the region. Both regression models are functions of a vector of covariates, including the level of regional social capital.

The duration until the first regional founding event is captured by specifying a hazard model. Hazard models are used to model time-to-event data and are widely adopted in fields studying the dynamics in organizational populations (Thompson 2005; Buenstorf and Klepper 2010). Hazard models take into account both the probability of occurrence of

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[13] The Online Games Datenbank can freely be consulted at http://www.ogdb.de.

[14] In the rare case that neither of the two databases provided this information, or in the rare case that the information in the two databases was contradictory, other online or hardcopy resources were consulted.

an event and the time duration until the occurrence of an event. By censoring observations, hazard analysis also allows for the incorporation of cases that have artificially imposed ends of duration, which is the case when a region fails to receive an entrant before the end of our observations. We specify our hazard model as follows:

$$\lambda(\tau|X) = \lambda_0\tau \, \exp[\beta_0 + \beta'X],$$

where $h(\tau)\lambda(\tau|X)$ is the regional hazard rate of receiving a first entrant in year τ. This regional hazard rate can be thought of as the probability that an event—receiving a first entrant—occurs conditioned on the fact that it did not occur in a prior time spell. In our specification, X is a matrix of all covariate vectors $x_1, x_2, \ldots, x_k$ that affect the hazard proportionally at all values of duration, β_0 is a scalar coefficient, and β' is a vector of coefficients.

To accommodate the analysis of the founding process of new ventures in the video game industry, we estimated the arrival rates of new video game producers in BEAs. This is consistent with the majority of model specifications in the field of organizational ecology (Carroll and Hannan 2000; Stuart and Sorenson 2003). Each region enters the model in the year of the first founding event in that specific region. Regions in which no entry has occurred are thus excluded from this analysis. Our dependent variable, the yearly number of founding events in a region, has the following characteristics: (1) its value is nonnegative and discrete; (2) its distribution is skewed, which causes overdispersion; and (3) it is measured for each year. Since certain assumptions of the ordinary least squares (OLS) regression are violated, and because the distribution of the dependent variable is over-dispersed ($\alpha = 0.031$, $p = 0.01$), we employ negative binomial regression models to study the effect of the covariates on the yearly regional founding rates (Cameron and Trivedi 1998). We specify the negative binomial model using a fixed effects specification in which the fixed effects refer to the BEA regions. Note that our argument about the effect of social capital on firm founding does not stress the differences in the levels of social capital across regions, which is different from existing studies on the relationship between social capital and regional development (e.g., Beugelsdijk and Van Schaik 2005; Echebarria and Barrutia 2010; Cortinovis et al. 2017). Instead, it stresses that the available social capital in a region can become an asset for local entrepreneurs when their presence in the region is strong enough to influence the public opinion about the nature of the new industry. By modeling the variance in firm density within regions, we can truly examine the moderating effect of firm density in the relation between regional firm founding and regional social capital. Below we describe the variables used in the regression models.

Dependent Variables

Duration to First Entry. This is the hazard rate of receiving a first entrant in year t for region i. If a region experiences no entry event, the case is right censored.

Regional Entry. Our second dependent variable, *Yearly Regional Entry* is a count variable measuring the yearly number of regional founding events of both headquarters and subsidiaries at the BEA EA level. All yearly regional founding events add up to 2,057, which is the sum of all headquarters and subsidiaries in the database.[15]

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[15] Most prior studies that estimate regional founding rates focus solely on headquarters. In doing so, these analyses do not account for economic activity that is generated as a result of establishing subsidiaries. In order to verify the robustness of our outcomes, we also ran our models on the set of regions excluding subsidiaries. The results are similar both in directions and significance levels.

Independent Variables

Social Capital. There is considerable debate on the measurement of social capital (Maskell 1999). Many studies that examine stocks of social capital tend to rely on the World Value Survey that attempts to capture the share of people within a region that *have trust in other people.* Another popular data source, following Putnam's definition of social capital, includes data sets on the number of associations within spatially bounded areas.[16] We make use of an index called *Regional Social Capital* that measures the yearly levels of social capital at the BEA EA level. We followed Rupasingha, Goetz, and Freshwater (2006)—who build up this index from the main proxies of social capital as mentioned in Putnam (2000)—and collected data[17] on the total number of associations, the number of not-for-profit organizations per 10,000 inhabitants, the census mail response rates for the decennial household census, and the vote cast for presidential elections divided by the total population of individuals over eighteen for every BEA EA in our data set.

Associational activity is a widely accepted social capital indicator that captures the notion of civic sociability (Putnam 1993). A high intensity of associational activity (membership) in a region reflects a high rate of social interaction and the presence of strong ties that favor sharing and diffusion of information but also tend to generate conformity. We expect associational activity to affect entrepreneurship negatively in a contested industry during its formative stage, because such a social structure discourages deviant behavior. However, we expect it will turn into a positive relation between social capital and entry for increasing firm populations in a region, because such a social structure makes information diffuse quickly and enables collective action, triggering more entrepreneurship. Associational activity has been widely used in many studies on social capital (e.g., Knack and Keefer 1997; Beugelsdijk and Van Schaik 2005; Crescenzi, Gagliardi, and Percoco 2013). In our index, associations include bowling alleys, public golf courses, civic and social associations, religious organizations, fitness facilities, political organizations, labor organizations, business organizations, professional organizations, and sports clubs, as defined by the US Census Bureau. Nonprofit organizations and mail-in census responses both reflect a sense of civic responsibility and civic cooperation (Knack 2002). In that sense, we expect civic responsibility in a region to discourage entrepreneurship in contested industries during their formative stage, because it facilitates mobilization of opposition against something that challenges the predominant norms and values. However, once the new industry gets a critical mass in a region, this civic responsibility is likely to encourage legitimacy-building. Following Putnam (1993), votes cast for presidential elections illustrates civic engagement and political participation in regions in particular. We expect political participation to affect entrepreneurship negatively in a contested industry during its emergence stage because it encourages political opposition, but it will

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[16] Besides the reliability issue of using World Value Survey data (Glaeser et al. 2000), two major disadvantages of using these data are that they are either not updated annually or started to be updated annually only recently, and that they are usually not available at detailed regional levels. A major advantage of associational data is that it is updated annually and that it is available at various spatial levels (Westlund and Adam 2010), which better fits the spatial and temporal dimension of our case.

[17] The process of constructing the data and extracting the index is similar to the procedure described in Rupasingha, Goetz, and Freshwater (2006) and in other studies (e.g., Putnam 2007). The data on associations can be found at http://www.census.gov/econ/cbp/historical.htm. Not-for-profit organizations include all tax-exempt legal entities registered at the National Center for Charitable Statistics. Votes cast was measured using Dave Leip's Atlas of US Presidential Elections, and mail response rates were obtained from the US Census Bureau. The complete data set is available from the authors upon request, and the method we employed is similar to Rupasingha, Goetz, and Freshwater (2006). Note that we scaled the four variables under consideration prior to the analysis to have unit variance.

Table 1

Yearly Correlation Coefficients for the Four Components of the Social Capital Index

Year	Component	Mail Response	Vote Cast	Associations
1972	Vote cast	0.988		
	Associations	0.586	0.552	
	Not-for-profit organizations	0.531	0.501	0.973
1973	Vote cast	0.988		
	Associations	0.585	0.552	
	Not-for-profit organizations	0.530	0.500	0.973
1974	Vote cast	0.988		
	Associations	0.585	0.551	
	Not-for-profit organizations	0.529	0.499	0.974
1975	Vote cast	0.987		
	Associations	0.584	0.550	
	Not-for-profit organizations	0.529	0.498	0.975
1976	Vote cast	0.987		
	Associations	0.583	0.550	
	Not-for-profit organizations	0.528	0.497	0.976
1977	Vote cast	0.987		
	Associations	0.583	0.549	
	Not-for-profit organizations	0.527	0.496	0.977
1978	Vote cast	0.987		
	Associations	0.582	0.548	
	Not-for-profit organizations	0.526	0.495	0.978
1979	Vote cast	0.987		
	Associations	0.581	0.547	
	Not-for-profit organizations	0.526	0.494	0.979
1980	Vote cast	0.987		
	Associations	0.582	0.547	
	Not-for-profit organizations	0.526	0.494	0.979
1981	Vote cast	0.987		
	Associations	0.582	0.548	
	Not-for-profit organizations	0.526	0.494	0.980
1982	Vote cast	0.987		
	Associations	0.582	0.548	
	Not-for-profit organizations	0.526	0.494	0.981
1983	Vote cast	0.987		
	Associations	0.582	0.548	
	Not-for-profit organizations	0.526	0.494	0.981
1984	Vote cast	0.987		
	Associations	0.581	0.547	
	Not-for-profit organizations	0.526	0.493	0.982
1985	Vote cast	0.987		
	Associations	0.581	0.547	
	Not-for-profit organizations	0.526	0.493	0.983
1986	Vote cast	0.987		
	Associations	0.581	0.547	
	Not-for-profit organizations	0.526	0.493	0.983
1987	Vote cast	0.987		
	Associations	0.579	0.545	
	Not-for-profit organizations	0.526	0.493	0.984
1988	Vote cast	0.986		
	Associations	0.582	0.556	
	Not-for-profit organizations	0.526	0.504	0.984
1989	Vote cast	0.986		
	Associations	0.586	0.560	
	Not-for-profit organizations	0.527	0.505	0.983
1990	Vote cast	0.987		
	Associations	0.585	0.563	
	Not-for-profit organizations	0.524	0.505	0.983
1991	Vote cast	0.987		
	Associations	0.586	0.564	
	Not-for-profit organizations	0.524	0.505	0.983
1992	Vote cast	0.986		
	Associations	0.588	0.556	
	Not-for-profit organizations	0.524	0.495	0.983
1993	Vote cast	0.986		
	Associations	0.592	0.560	
	Not-for-profit organizations	0.523	0.494	0.982
1994	Vote cast	0.986		
	Associations	0.594	0.562	
	Not-for-profit organizations	0.523	0.494	0.982
1995	Vote cast	0.986		
	Associations	0.593	0.562	
	Not-for-profit organizations	0.522	0.493	0.982
1996	Vote cast	0.985		
	Associations	0.596	0.557	
	Not-for-profit organizations	0.524	0.486	0.982
1997	Vote cast	0.985		
	Associations	0.595	0.556	
	Not-for-profit organizations	0.527	0.489	0.983
1998	Vote cast	0.985		
	Associations	0.582	0.542	
	Not-for-profit organizations	0.530	0.491	0.982
1999	Vote cast	0.985		
	Associations	0.579	0.540	
	Not-for-profit organizations	0.530	0.491	0.984
2000	Vote cast	0.983		
	Associations	0.588	0.545	
	Not-for-profit organizations	0.539	0.497	0.985
2001	Vote cast	0.983		
	Associations	0.588	0.544	
	Not-for-profit organizations	0.538	0.496	0.986
2002	Vote cast	0.983		
	Associations	0.589	0.545	
	Not-for-profit organizations	0.538	0.495	0.985
2003	Vote cast	0.983		
	Associations	0.586	0.542	
	Not-for-profit organizations	0.535	0.492	0.986
2004	Vote cast	0.984		
	Associations	0.585	0.545	
	Not-for-profit organizations	0.532	0.492	0.987
2005	Vote cast	0.984		
	Associations	0.583	0.543	
	Not-for-profit organizations	0.532	0.492	0.987
2006	Vote cast	0.984		
	Associations	0.582	0.541	
	Not-for-profit organizations	0.530	0.489	0.987
2007	Vote cast	0.984		
	Associations	0.583	0.542	
	Not-for-profit organizations	0.527	0.486	0.987

positively affect entry once the new industry has reached a substantial presence in the region, because it encourages collective action and political mobilization to serve its own interests. Both the census mail response rate and the votes cast for presidential elections are available only for a sample of the years covered in this study. The census mail response rate is updated every ten years, and we therefore calculated the yearly rate by taking into account the observation closest in time. For example, to calculate the social capital index of 1994 we used the value of the census mail response rate of 1990, while we used the value of the census mail response rate of 2000 to calculate the social capital index in 1996. We applied the same method for the votes cast for US presidential elections, which are held every four years.

To create an index from these four regional time series of data, we used principal component analysis. By calculating the first principal component for each year of observations, we were able to create a variable for each region in each year. For each year the eigenvalue of the first principal component exceeded 1.5 while other components had an eigenvalue of below 1. The main reason for creating a single social capital index rather than relying on each of the four variables is twofold: First, we have no reason to believe that any of the four proxies of social capital is more important than the others, nor does our theoretical argument distinguish between the roles of any of the four. Second, the four proxies are highly correlated, which persistently holds along all years of observation. Table 1 provides an overview of the persistence of these correlations. A general pattern in this data is the strong correlation of about 0.98 both between the votes cast during US presidential elections and the US census mail response rate, on the one hand,[18] and between the number of associations and not-for-profit organizations, on the other hand. The other correlations are also strong and tend to hover around the 0.5 level.

The index variable *Regional Social Capital* is stable over time. To show the relative stability of the variable within regions over time, we plotted the share of yearly regional social capital observations that lies outside and within the 95 percent confidence interval of the mean in Figure 2. For each region in our data set, we calculated the mean of the social capital variable over the years 1972 to 2007. Then we subtracted these means from the year-region values and calculated whether or not these deviations from the mean exceeded the 95 percent confidence interval or were within boundaries. Figure 2 indicates that the *Regional Social Capital* variable is indeed very stable within regions.

To illustrate the value of the *Regional Social Capital* variable, in 2007 the social capital index reports the highest level of social capital in the Salina, Kansas, area and the lowest level of social capital in the Fresno-Madera area in California.

Firm Population. The variable *Regional Firm Population* measures the number of video game firms in year t that were located in region i. A firm enters the population in the year of entry and exits the population in the year that the firm is no longer active. It is possible that firm population effects operate on a higher level of spatial aggregation (Hannan et al. 1995; Bigelow, Carroll, and Seidel 1997). We therefore also include the variable *National Firm Population*, measuring the number of video game firms in year t within the US and *Global Firm Population*, which measures the number of firms that are active in the production of video games worldwide. By doing so, we clearly distinguish between population size effects at regional levels and population size effects at the national and global level (Bigelow, Carroll, and Seidel 1997). Following the typical approach in population ecology models, the squared term of *Regional Firm Population* is also included to capture nonlinearity in the

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[18] Please note that the persistence of the high correlation between these two variables could well be the result of our interpolation methods used to account for noncensus years and nonelection years.
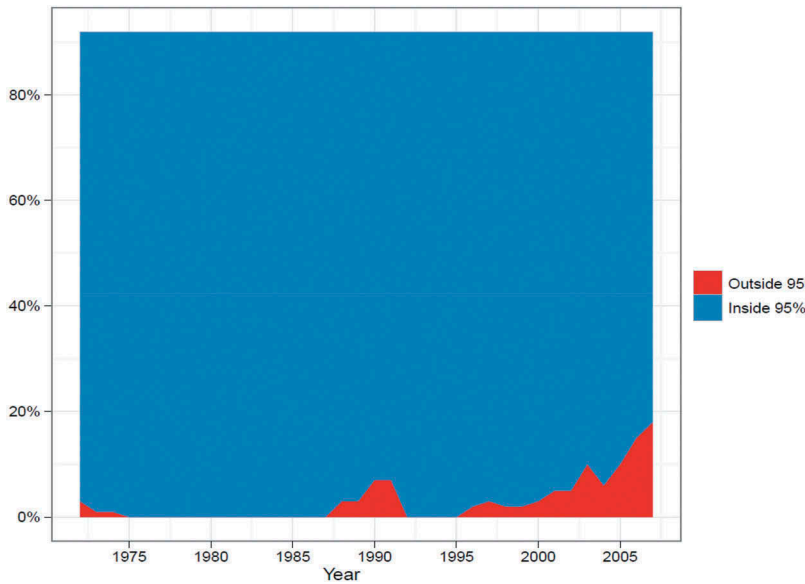
Figure 2. Share of yearly regional social capital observations that lie outside and within the 95 percent confidence interval (CI) around the mean.

population effect. The sign of this variable is expected to be negative since competition sets bounds to unlimited growth of the population.

Control Variables

The control variables in our models are included to eliminate alternative explanations of the relation between the main independent variables—Regional Social Capital and Firm Population—and the dependent variables—Time to First Entry and Regional Entry.

Population. National Population/100,000 measures the size of the US population in year *t* minus the population of the focal region in year *t* divided by 100,000, and *Regional Population/100,000* captures a similar measure at the regional level. We included the population variables to control for the potential base of resources and number of entrepreneurs. Regions characterized by high population levels are likely to experience higher levels of firm entry either because of chance or because potential entrepreneurs value the larger resource base found in densely populated regions.

Personal Income. The variable *Regional Personal Income per capita/100,000* measures the personal income per capita in region *i* in constant (baseyear = 2007) US dollars divided by 100,000. This variable is included to control for the differences in purchasing power of the inhabitants of the BEA regions in the US. Increasing wealth is expected to be positively associated with entrepreneurship, because it increases the total pool of financial resources that the potential entrepreneur can draw upon.

Net Migration. We use yearly data from the Internal Revenue Service (IRS) to measure the yearly levels of migration into the region and migration out of the region and subtract these variables to create a new variable that captures the regional level of net migration. We include this variable because migrants coming into the region may bring new values and ideas from contexts outside the region, possibly increasing entrepreneurship and subsequent firm founding events, while migrants leaving the

region may represent a loss of a previously present stock of knowledge, capabilities, and potential for entrepreneurship.

Regional Diversity. Our theory includes statements about the vested interests that are present in a region and that might motivate the individuals and organizations holding those interests to defend them. By including a variable that measures *Regional Diversity* we aim to account for the heterogeneity in the distribution of interests in a region. For example, one may argue that entrepreneurial activity in a new industry in a region that is dominated by one type of industry is more likely to be considered deviant than entrepreneurial activity in a new industry in a region that accommodates many industries of similar sizes (Grabher 1993). We operationalize our *Regional Diversity* measure by calculating a yearly updated entropy measure for each region using County Business Pattern data from the US Census Bureau. We further describe the construction of the variable in Appendix A (available online).

Region Age. This variable captures the number of years since the first founding event in region *i*. It accounts for the possibility that the legitimation process of firms in a region is not so much the result of additional firms entering the region but that the legitimation process is simply a function of time passed since the first regional founding event. In other words, if firm populations grow monotonically over time, an alternative explanation of the common finding—that the increasing density of firms within a region causes other firms to enter the region by means of a legitimation process—could be that the endurance of exposure to an activity is the legitimizing factor rather than the mass of exposure.

Industry Age. This variable is included in the model to account for unobserved time trends that affect the entry rates of firms in a region.

Table 2 shows the descriptive statistics and the correlation coefficients[19] of all variables in the data set. We observe a negative correlation between the dependent variable in our model and our measure of social capital. We further recorded the social capital values for the four main clusters in Table 3. Given that the mean index of regional social capital is only −0.29, the table thus indicates that the social capital values of three of the four clusters are well below the nation's average. This provides a first indication that social capital may not, indeed, enhance the creation of new industries.

Results

In Table 4 we present the hazard model for all 177 BEA regions in the US. Since we model the duration until the first founding event in a region, variables that measure firm population or national statistics are not included in the vector of covariates. The coefficient of *Regional Personal Income* per capita is positive and the effect differs significantly from zero indicating that regions with higher levels of personal income are more likely than regions with lower levels to experience the entry of a video game production firm. This finding can be attributed to a wide range of factors including the availability of financial capital, the possibly better infrastructure available in the region, or the high regional demand of consumers. We also find a positive relation between the size of the population and the hazard of receiving a founding event. The variable *Net Migration* is positive and significant. This implies that regions that have more individuals migrating into the region

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[19] Correlation values of some variables exceed 0.50. Although high levels of correlation are unlikely to bias the coefficient estimates, it may cause the standard errors to be inflated. As a result, tests of the hypotheses become more conservative (Allison 1999). We assessed whether our results are affected by multicollinearity by calculating the Variation Inflation Factors (VIFs). None of the VIFs were greater than 5 indicating that our results are unlikely to be affected by multicollinearity.

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Table 2

Descriptive Statistics

	Variables	Mean	Std. Dev.	Min.	Max.	1	2	3	4	5	6	7	8	9	10	11	12
1	Regional Entry Rates	1.27	3.28	0.00	33.00	1.00											
2	Social Capital	-0.29	0.60	-1.75	1.64	-0.21	1.00										
3	Regional Firm Population	5.02	13.45	0.00	117.00	0.87	-0.22	1.00									
4	National Firm Population	363.44	143.52	0.00	505.00	-0.11	0.05	-0.02	1.00								
5	Global Firm Population	720.28	345.79	0.00	1306.00	-0.02	0.03	0.10	0.94	1.00							
6	Regional Population/100,000	29.87	36.49	1.21	227.39	0.62	-0.28	0.65	-0.18	-0.09	1.00						
7	National Population/100,000	2675.45	217.09	2092.75	2983.80	-0.05	0.04	0.06	0.95	0.99	-0.11	1.00					
8	Regional Personal Income per Capita/100,000	0.33	0.05	0.20	0.55	0.31	0.03	0.40	0.45	0.56	0.45	0.55	1.00				
9	Net Migration	0.00	0.12	-0.86	0.41	-0.40	-0.07	-0.38	0.06	0.01	-0.61	0.02	-0.20	1.00			
10	Regional Diversity	2.63	0.39	0.00	2.96	0.04	-0.07	0.09	0.12	0.20	0.09	0.21	0.11	0.01	1.00		
11	Region Age	10.71	7.54	0.00	34.00	0.28	-0.09	0.39	0.53	0.62	0.28	0.60	0.64	-0.05	0.25	1.00	
12	Industry Age	23.29	7.54	0.00	34.00	-0.05	0.04	0.06	0.95	1.00	-0.11	1.00	0.54	0.03	0.20	0.60	1.00
	Variables	Mean	Std. Dev.	Min.	Max.	1	2	3	4	5	6	7	8	9	10	11	12

Table 3

Descriptive Statistics of the Four Main Clusters

	1972	1980	1988	1996	2004
Los Angeles					
No. firms	0	9	45	96	96
Social Capital	n.a.	−1.10	−1.09	−1.32	−1.26
San Francisco					
No. firms	1	11	52	99	78
Social Capital	−0.42	−0.39	−0.48	−0.65	−0.70
Seattle					
No. firms	0	1	9	22	48
Social Capital	n.a.	0.13	−0.16	−0.13	−0.11
New York					
No. firms	0	2	15	32	36
Social Capital	n.a.	−0.87	−0.78	−0.77	−0.76

Table 4

Cox Proportional Hazard Model

Variables	Model 1
Social Capital	−0.454*
	[−0.230]
Net Migration	7.494***
	[−1.440]
Regional Population/100,000	0.035**
	[−0.010]
Regional Personal Income per Capita/100,000	16.554***
	[−2.690]
N	4441
LR statistic	108.160
Pr > Chi²	0.000
Log-Likelihood	−399.291

* p < 0.05, ** p < 0.01, *** p < 0.001

than individuals migrating out of the region are more likely to accommodate an initial entrant into the industry than regions with a negative migration balance. Finally, we find a negative and significant association between the level of *Regional Social Capital* and the hazard of receiving a founding event. This result indicates that regions with high levels of social capital were less likely to experience a founding event in the years of observation, which is in line with our argument about the relation between social capital and regional entrepreneurship.

In the models presented in Table 5 we test our hypothesis concerning the negative relation between social capital and the number of entrants per se, and the positive relation between social capital and entry for increasing regional firm populations. We employ negative binomial fixed effects models[20] to estimate the parameters of interest. In model 2 we include our control variables. While the coefficient of *Regional Population* is positive and significant, *National Population* displays a negative relation with regional entry rates that is significantly different from zero. This indicates that an increase in the population in region

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20   To test the robustness of our findings against different specifications of the model, we have included in Appendix B (available online) three additional models: B1 in which we specify a random effects model (i.e., region-specific are assumed to be orthogonal to the other covariates in the model), B2 in which we recalculate the *Regional Social Capital* variable including only the two components that vary every year.

Table 5

Negative Binomial (FE) Regression Estimates (Regional Entry Rates)

Variables	Model 2	Model 3	Model 4	Model 5	Model 6
Social Capital × Regional Firm Population^2					−4.028*
					[1.601]
Social Capital × Regional Firm Population					11.306***
					[3.410]
Social Capital				−0.642*	−1.006**
				[0.288]	[0.307]
Regional Firm Population^2			−3.717***	−3.833***	−5.496***
			[0.876]	[0.884]	[1.601]
Regional Firm Population		1.276	7.498***	6.939**	11.942***
		[1.636]	[2.188]	[2.212]	[2.707]
National Firm Population		0.012***	0.011***	0.011***	0.011***
		[0.001]	[0.001]	[0.001]	[0.001]
Global Firm Population		−0.008***	−0.007***	−0.008***	−0.008***
		[0.001]	[0.001]	[0.001]	[0.001]
Regional Population/100,000	0.018***	0.008	0.006	0.008	0.025**
	[0.005]	[0.007]	[0.006]	[0.006]	[0.008]
National Population/100,000	−0.004*	−0.006**	−0.002	−0.002	−0.002
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Regional Personal Income per Capita/ 100,000	−0.269	−0.427	−2.058	−1.995	−2.613
	[1.745]	[1.522]	[1.521]	[1.522]	[1.580]
Net Migration	−0.168	−0.257	0.010	0.043	−0.207
	[0.240]	[0.190]	[0.193]	[0.195]	[0.205]
Regional Diversity	−1.228***	−0.482*	−0.532*	−0.469*	−0.505*
	[0.230]	[0.229]	[0.225]	[0.227]	[0.231]
Region Age	−0.009	−0.015	−0.009	−0.008	−0.012
	[0.051]	[0.050]	[0.050]	[0.050]	[0.050]
Industry Age	0.165***	0.524***	0.378***	0.372***	0.377***
	[0.071]	[0.091]	[0.097]	[0.097]	[0.097]
Constant	9.864*	8.523***	1.985	1.112	2.085
	[3.564]	[3.578]	[3.84]	[3.868]	[3.868]
N	1739	1739	1739	1739	1739
LR statistic		101.397	17.756	4.972	13.720
Pr > Chi2		0.000	0.000	0.026	0.001
Log-Likelihood	−1655.731	−1605.033	−1596.154	−1593.668	−1586.808

*$p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

i leads to a higher likelihood of firms establishing a video game company in that region. A glance along the table rows of the two variables, however, indicates that this result is not stable once we account for our main independent variables. The other two control variables that show coefficient values that are significant are *Regional Diversity* and *Industry Age*. *Regional Diversity* is negatively related to the entry rates of new firms in the industry, and this result holds across the range of model specifications in Table 5. The effect of *Industry Age* though is positively related to firm entry across the whole range of models.

In models 3 and 4 we also include the variables describing the population of firms: at the regional, national, and global level. In model 4, all firm population variables are statistically significant. The effect of the firm population at the national level is positive, while the coefficient of *Global Firm Population* is negatively related with the count of regional entries. The main and the squared term of the *Regional Firm Population* variable indicates a nonlinear, bell-shaped relation between *Regional Firm Population* and the regional entry rate. This implies that regional entry rates are likely to increase when the population of firms at the country level increase. Such an effect also can be observed at the regional level although the positive effect bends into a negative effect with an increase in the regional firm population. Bigelow, Carroll, and Seidel (1997) find a similar positive effect of both national and regional density on entry at the regional level, but various other studies (Sorenson and

Audia 2000; Cattani, Pennings, and Wezel 2003; Stuart and Sorenson 2003) find no such effect for national density. In sum, the results from model 4 indicate that an increase in regional entry rates is positively related to an increase in both national and regional firm population levels—a relation that may be attributed to legitimation processes. However, after reaching a threshold, increases in the firm population lowers the number of firms entering a region—which is possibly the result of an increase in competitive forces.

In models 5 and 6 we further probe the relation between legitimation and the entry of new firms in the region. In model 5 we include the *Regional Social Capital* variable. The coefficient is negative and significant at the 5 percent level, indicating that changes in the level of social capital affect the regional entry rates of firms in the video game industry as we expected. In model 5 we add an interaction between our *Regional Social Capital* and *Regional Firm Population* variables. Following Brambor, Clark, and Golder (2006) and Berry, Golder, and Milton (2012) we also interact *Regional Social Capital* and the squared term of *Regional Firm Population*. After including this interaction in our model, the main effect of *Regional Social Capital* remains negative and significant. Additionally, the interaction effects alone are statistically significant, and the interaction effects and its main effects are jointly significant too.

To better understand how *Regional Firm Population* moderates the (marginal) effect of *Regional Social Capital* on the dependent variable, we have plotted the marginal effect of *Regional Social Capital* on the regional entry rates of firms for the full range of observed values of *Regional Firm Population*. In Figure 3a, the first graph shows that the marginal effect of *Regional Social Capital* is low and essentially indistinguishable from zero for low values of *Regional Firm Population* and that for an increase of *Regional Firm Population*, the marginal effect of *Regional Social Capital* also increases and is statistically different from zero. Since the vast majority of all regions in our sample accommodate a low number of video game firms (see the histogram in Figure 3a), we zoom in on the left tail of the distribution in Figure 3b. The graph shows that there is a clear difference between the marginal effect of social capital for regions that accommodate a low number of video game firms and regions that accommodate a higher number of video game firms. Note that since, for each observation, an individual marginal effect can be computed, each vertical bar (the span of the bar represents the 95 percent confidence interval) captures the average marginal effect of all observations with the same number of firms in the region. The results depicted in these graphs confirm our hypothesis about the moderating effect of the number of firms in a region on the relation between social capital and regional entry rates.[21]

Discussion and Conclusion

We have argued that social capital initially discourages entrepreneurship in new industries. As social capital leads to conformity in values and ideas, deviant entrepreneurial behavior is less accepted in regions with strong social capital than in regions with little social capital. Once an industry becomes more legitimate over time as the number of firms grows, social capital will be become less restrictive on entrepreneurship and can even

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[21] Failing to account for such spatial dependence could potentially bias the results. Although we have motivated our choice of BEA regions as the units of analysis, it could well be that changes in neighboring regions spill over to the focal region, which in turn may affect some of the changes we observe in this focal region (Anselin 1988). Therefore, we have also estimated the parameters of our models using two commonly employed techniques in the analysis of spatial data. The results from these estimations indicate that the findings presented in Table 5 are robust. The models that account for spatial dependence can be found in Appendix C (available online).
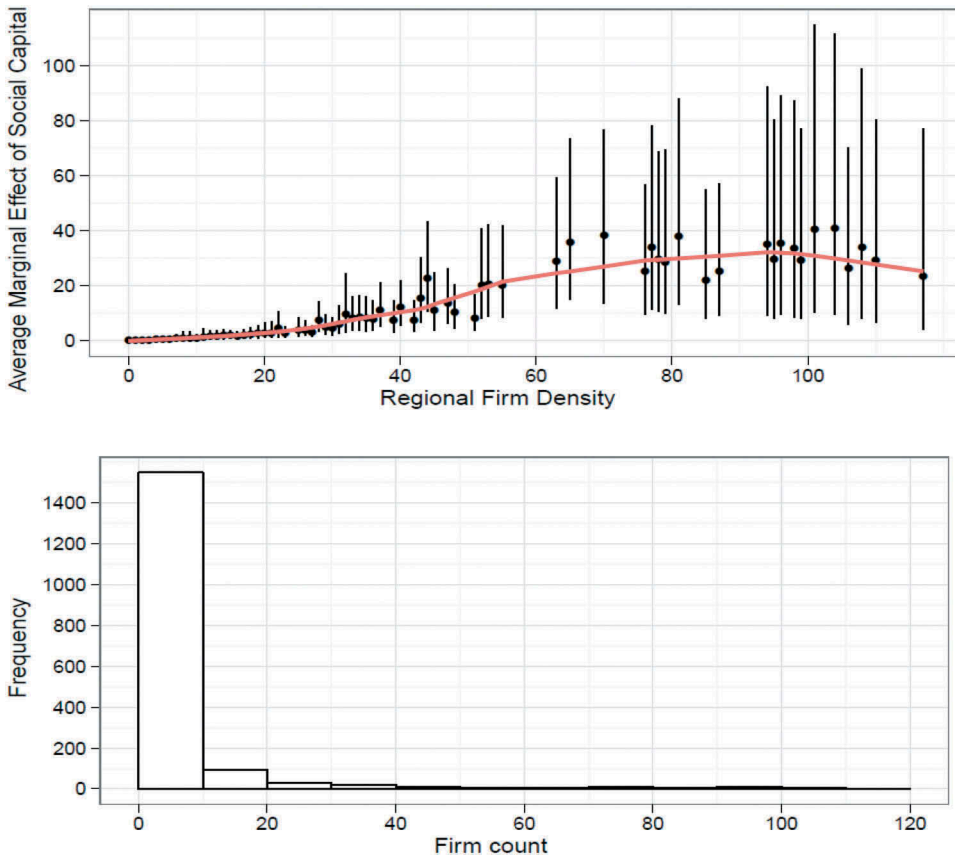
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Figure 3a. Marginal effect of social capital on firm entry—population.

become positive. Using data on all entrants in the US video game industry, we found indeed that increases in social capital decrease the likelihood that any video game firm will enter the region. We also found that, as a new industry continues to grow over time in a region, the marginal effect of social capital on entrepreneurship is positive, because the benefits of social capital for starting new ventures start to outweigh its detrimental effects. In other words, the initial negative effect of social capital is transposed into a positive effect by video game firms already present, because the more video game firms are already present in a region, the more likely they will be able to organize themselves to alter the sociopolitical context in which they operate. We understand this pattern as a reflection of the mainstream status that video game production has achieved in regions with high density of video game firms.

Our work contributes to the literature on social capital and sheds new light on the conditions under which social capital benefits entrepreneurship. Despite the idea that social capital represents a beneficial characteristic of a region or nation in terms of promoting economic growth, research on the topic has produced mixed results (Staber 2007; Westlund and Adam 2010). Our research uncovers some of the subtleties of the relation between social capital and entrepreneurship. High levels of social capital function as barriers and do not easily allow the entry of new and deviant ideas, but once the population promoting the new and deviant ideas grows large enough, penetration of these same ideas
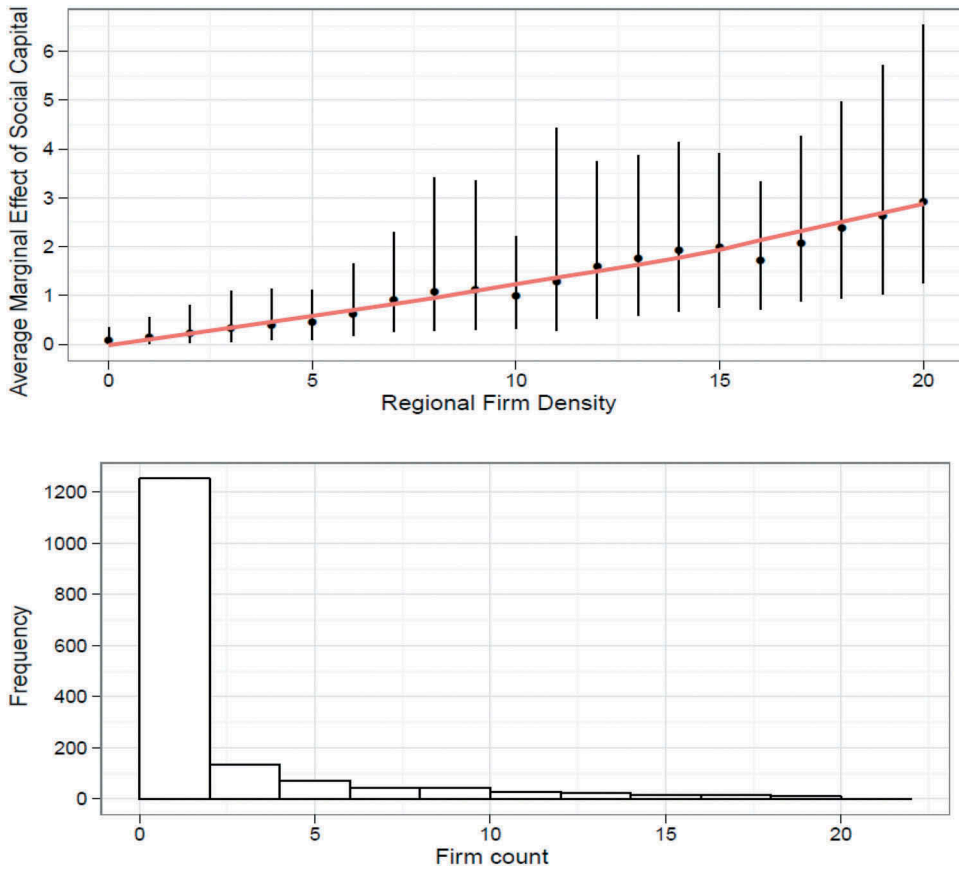
Figure 3b. Marginal effect of social capital on firm entry—Sample.

into the strong social audience becomes possible. This research also shows the importance of definition and measurement. Although the purpose of this study is not to claim that our measure of social capital used in this article fully captures all dimensions of the rich but ambiguous concept of social capital, we do want to point out that a problem of the literature that studies social capital is created by the lack of longitudinal accounts of the effects of social capital. Such accounts are limited to capturing the effect of social capital on growth at one point in time, which could have generated the mixed results found in the literature. We hope that future research could further examine the commensurability of different data sources used to define and measure social capital.

Our research brings together insights from different literatures on organizational ecology, social capital, and economic geography. Doing so, the study adds to our understanding of how new organizations emerge in space. Our finding that entry increases when regions with high social capital accommodate a sizable pool of firms can be interpreted as a case of category-building: as the number of firms increases in regions with high social capital, these firms can organize themselves and effectively communicate their motivations for receiving legitimacy—thereby defining themselves as a coherent category of firms—to the audiences involved in the legitimation process. An additional explanation that also speaks to research on categories holds that an increase in the number of firms allows producers to learn from each other and to collectively reorganize the

content of their activity and products by conforming to the norms and boundaries defined by its audience. An example of such a case would be when entrepreneurs start to adopt practices that were regarded as legitimate in neighboring domains: using film scripts to base video games on, claiming that video games served educational purposes, and recent claims that video gaming could benefit public health.

Future research could further explore a number of issues. First, do regions with high levels of social capital initially experience lower entry rates in every industry, or is this an industry-specific finding? As we have indicated in our theoretical discussion, many new industries are contested in their early stages. Hence, social capital, and conformity in values and ideas as its by-product, is expected to discourage entry in many more industries. While each new industry is more or less contested due to the *liability of newness*, one could argue that a distinction can be made between heavily contested versus less contested industries. If so, future research could assess whether the effects of social capital on entry are different for these two types of industries, to test whether our findings can be generalized to any other industry. Second, a limitation of our study is that we do not observe directly processes of legitimation. This requires in-depth qualitative studies that focus on how actors in a new industry change norms and regulations or align their activity closer to existing norms. Third, can social capital nevertheless be supportive of new industry creation if a region already hosts technologically related industries (Cortinovis et al. 2017)? In our present study, we were not able to account for the effects of related industries given the lack of historic data. Yet, legitimacy spillovers can be expected between industries as long as the institutions in place legitimizing related industries are also supportive of the growth of a new industry. This is not necessarily the case, since new industries may cannibalize the input and output market of related industries (Wenting and Frenken 2011). Finally, can the results obtained at the regional level be extrapolated to the national levels? That is, can one expect countries with higher social capital to be less entrepreneurial in setting up new industries? Finland and Sweden immediately come to mind as two important counterexamples. Indeed, social capital at the national level may well play a very different role than social capital at the regional level, since countries with strong social capital may still leave room for various experimental cultures. After all, the concept of social capital of a country remains a construct composed of an average of heterogeneous regions.

In sum, by studying social capital as a regional attribute we have theorized and tested how the effect of social capital on regional levels of entrepreneurship is moderated by the state of development of the local industry. Our findings indicate that social capital should not be seen as a *holy grail* that promotes and benefits entrepreneurship, but rather as an opportunity that can be exploited as soon as more firms entering the market start to confederate.

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