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The embedded entrepreneur

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Abstract

Using comprehensive data on the Danish population, this paper examines the determinants of entrepreneurs' choices of where to locate their new ventures. Our findings suggest that entrepreneurs place much more emphasis on being close to family and friends than on regional characteristics that might influence the performance of their ventures when deciding where to locate those businesses. Two factors could explain our findings: On the one hand, entrepreneurs may simply value proximity to family and friends. On the other hand, these relationships may help them to assemble the assets and to recruit the personnel that they need to succeed in their ventures. Our results suggest that the former plays the greater role in entrepreneurs' location choices.

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Introduction

The idea of someone being embedded conjures up certain images. It suggests someone who knows their neighbors, someone who can navigate the local scene, someone who understands the history of a place, someone trusted by the community. It also suggests someone with a certain level of social attachment, someone who undoubtedly has friends in an area and who probably has family there as well.

The notion of an embedded entrepreneur summons similar impressions. One points to the advantages of the local in terms of connections and private information, in the ability to raise funds, to recruit employees, to position products and services, and to sell to customers. Another reflects the emotional affinity of the founder to the place and the people that live there.

Although these images and impressions suggest somewhat divergent mechanisms, they converge in portraying the entrepreneur as someone rooted firmly in place.

Much of the management literature, however, points to a potentially different picture of the entrepreneur. It suggests an individual unbothered by ambiguity, unfettered by uncertainty, an individual with a predisposition for novelty (Kirzner, 1973; Begley and Boyd, 1987; Astebro and Thompson, 2007). One might expect such people to embrace not just new technologies but new places as well. Indeed, Saxenian (2006) has gone so far as to describe many of these entrepreneurs as modern-day Argonauts roaming the world in search of their own golden fleeces.

Certainly, either of these images serve as but a caricature of a real entrepreneur, but which holds greater sway?

Is the typical entrepreneur more a local, embedded in the community, or more a nomad in search of oases of economic opportunity? At first blush, the evidence seems to favor the former. Not only do entrepreneurs tend to locate their businesses near to their homes (Figueiredo *et al.*, 2002), but also they appear even more geographically rooted than those employed by others (Michelacci and Silva, 2007). But such evidence is equivocal. Jobs at existing employers, for example, may have first attracted future entrepreneurs to these regions. Consider Robert Noyce, the co-founder of Intel. He grew up in Iowa and moved to Silicon Valley, not to found Intel, but for a job at Beckman Instruments (Berlin, 2005). Regions might also vary in both their propensities to produce entrepreneurs and their abilities to anchor individuals in place.

We propose a novel approach to addressing this question. Drawing on an exceptionally rich database of entrepreneurs in Denmark, we examine which factors appear most important to where entrepreneurs choose to locate their fledgling ventures. We focus on two kinds of factors: (1) the sensitivity of entrepreneurs to regional attributes that they might consider informative in terms of the expected success of their ventures; (2) the value that entrepreneurs place on being proximate to family and friends and to staying in the regions that they know. We also explore the extent to which these factors vary in determining location choice across subsets of entrepreneurs – among those spinning out of existing employers in the industry vs those entering without prior industry



experience, and according to the sectors of the economy that they enter.

Our results suggest that the image of the entrepreneur as an embedded local is an appropriate one. Social factors weigh in more than four times as heavily as economic ones in entrepreneurs' location decisions. At least two facts, moreover, suggest that these weights reflect more their preference for being close to family and friends than the potential value of those connections to the success of their firms. First, entrepreneurs place similar value on being near to family and past residences as a random sample of employed individuals in the process of changing jobs. Second, our exploration of these preferences across subgroups found little variation in them, despite the fact that some of these entrepreneurs should have more to gain from connections than others. Entrepreneurs, therefore, appear little different from the general population in their preferences for proximity to family and friends. Being their own bosses may nonetheless afford them greater freedom in satisfying those desires.

Whether staying at home helps or hinders entrepreneurs remains an open question (Dahl and Sorenson, 2007), but these findings substantially bolster the stories of cluster formation and persistence that do *not* depend on agglomeration externalities. Sorenson and Audia (2000), for example, argue that clusters in shoe manufacturing persist not because of benefits to clustering but because entrepreneurs tend to come from incumbent firms in the industry and to found their firms in close proximity to these 'parent' firms (Stuart and Sorenson, 2003). Klepper has similarly shown that spin-outs, rather than agglomeration externalities, can account for the geographic concentration of automobiles in Detroit and of tires in Akron (Klepper, 2007; Buenstorf and Klepper, 2009). Our results, which span the entire economy, suggest that these industries and processes probably represent the rule, more than the exception.

Entrepreneurs' location choices

Although a large body of research considers the location decisions of existing firms, either establishing new branches or plants, or entering foreign countries, relatively little is known about where entrepreneurs choose to locate their ventures. Several recent studies nevertheless strongly suggest that entrepreneurs usually locate their businesses near to their homes. Figueiredo *et al.* (2002), for example, report that 72% of Portuguese entrepreneurs began their businesses in the same counties in which they had previously been employed. Examining data from an Italian survey, Michelacci and Silva (2007), moreover, find that entrepreneurs have an even stronger tendency than employees to remain in their regions of birth. Single industry studies come to similar conclusions. Parwada (2008), for instance, reports that 56% of entrepreneurs founding new investment firms in the United States headquartered their firms within 1 km of their prior employers. Buenstorf and Klepper (2009) find a similar pattern in the tire industry in the United States.

Although these studies have begun to establish the geographic inertia of entrepreneurs as an empirical regularity, they have shed limited light on the reasons

underlying these location choices. At least four sorts of stories might account for these results.

First, these 'home' regions might have more attractive economic attributes than other locations. They might have better educated labor forces, lower taxes or less expensive real estate. Bartik (1985), for example, finds that US states with lower wages and lower tax rates had higher odds of being chosen as sites for new plants in a study of the expansions of existing organizations. Or, these regions might offer agglomeration externalities. Firms can potentially benefit by locating near to other firms in their industry if they can share the same suppliers (Romer, 1987), if by doing so, they can attract a more able labor force at lower cost (Diamond and Simon, 1990), or if they can share information spillovers (Arrow, 1962). In certain types of businesses, primarily retail and consumer services, firms might also want to collocate to minimize the search and travel costs incurred by their customers (Graitson, 1982). These economic factors, of course, do not directly predict that entrepreneurs would locate near to their homes or their prior employers. But when one recognizes that most entrepreneurs in an industry come from the ranks of employees of existing firms in that industry (Vesper, 1979; Franco and Filson, 2006), then one would expect the same factors that attracted their employers to anchor (spin-out) entrepreneurs to the region.

Entrepreneurs might also choose these home locations so that they can leverage their social capital. Sorenson and Audia (2000), for example, argue that entrepreneurs remain rooted in their regions of origin because personal relationships help entrepreneurs to raise capital, to recruit employees and suppliers, and to attract customers.¹ Or, potential employees, customers and financiers may place greater trust in entrepreneurs with deep roots in a region, and therefore more readily offer them their assistance. These resources can not only help entrepreneurs to get their firms going, but also improve the ongoing performance of these firms. To the extent that the advantages of these relationships erode over distance, however, entrepreneurs can only exploit them when they stay close to these prior connections.

These first two explanations portray the entrepreneur as rationally choosing home locations because these places promise better performance than the alternatives. But this tendency to remain near to home may also reflect other processes. Most notably, entrepreneurs may locate their ventures to satisfy social preferences. People generally have family in their birth regions, whether parents, siblings or more distant relatives. Over time, they also develop friendships in their communities (Lansing and Mueller, 1967). Moving to a new location leads not just to a loss of the instrumental value of these relationships, but also to the loss of their emotional value. Moving away means seeing these family and friends less frequently and having less culture and fewer experiences in common with them. Reflecting this disutility, Davies *et al.* (2001) estimated that the average American would only consider moving to another state if it had an average income of \$170,820 to \$238,639 more than his or her current state of residence (Dahl and Sorenson, 2008). Since entrepreneurs have almost complete control over where they locate their ventures, they may indulge

these preferences and choose places close to family and friends.

Finally, of course, it is possible that entrepreneurs do not even actively consider their location choices. Many entrepreneurs begin their businesses while working full-time elsewhere (Gudgin, 1978). The location of that job therefore constrains their ability to move. Even those unencumbered by such dependencies might nonetheless simply fail to consider place an important choice in the founding of their firms.

Empirical strategy

To gain greater insight into which of these explanations might hold the most sway, we examined entrepreneurs' location choices directly. Our approach to estimating these choices stems from a random utility model. If an entrepreneur i has J possible choices for where to locate his or her new venture, let us define the utility, u_{ij} , associated with choosing region j as:

$$u_{ij} = \beta' x_{ij} + \varepsilon_{ij} \quad (1)$$

where x_{ij} represents a vector of region-specific characteristics, β captures the weights that an average individual assigns to each of these attributes, and ε denotes a random error in this utility function. By including both economic and social factors in the vector of region-specific covariates, we can determine whether the economic attractiveness of regions or whether proximity to family and friends drive these location choices.

If we assume the errors in (1) to be independently and identically drawn from a Weibull distribution, then the probability that individual i chooses region j is:

$$P(y_i = j) = \frac{e^{\beta' x_{ij}}}{\sum_j e^{\beta' x_{ij}}} \quad (2)$$

Equation (2), known as the conditional logit or the McFadden choice model, nets out the attributes of the entrepreneur – though one can examine individual-level heterogeneity in the weights by splitting the sample or through interaction terms – and the intrinsic randomness in the choice of locations. The β parameters (attribute weights) can be estimated using maximum likelihood methods.

Practically, our data set comprises J (grouped) observations for each entrepreneur, one of which the entrepreneur chooses as a location for his or her business. In each set of cases, the dichotomous dependent variable is coded one in the location chosen and zero in the $J-1$ locations not chosen.

Data

Our data come from government registers collected in the Integrated Database for Labor Market Research (referred to by its Danish acronym, IDA) and the Entrepreneurship Database (ED), both maintained by Statistics Denmark. IDA holds comprehensive, annually updated, longitudinal data on all individuals residing in Denmark from 1980 to 2006, including their family relations and the locations of their homes. It also links individuals to annual information on their employers. The Entrepreneurship Database,

meanwhile, includes information on the identities of the primary founders of new limited liability companies and sole proprietorships in Denmark from 1995 to 2004.

Our sample of entrepreneurs consists of the primary founders of all new firms with at least one employee in the first year, where we have information on the founder in both the firm's year of establishment and the preceding year. We excluded start-ups in the wholesale, primary and public sectors from the sample because we expect a host of other factors to affect location choices for those businesses. In total, the sample used for estimation includes 15,408 startups.

Central to our analysis is the selection of a spatial unit. We measured all regional attributes at the finest grain possible, at the level of the 271 municipalities ('kommuner' in Danish) in Denmark.² Figure 1 depicts the boundaries of these municipalities. These administrative units are similar in size and significance to counties or parishes in the United States. In essence, by measuring regional attributes and choices at this level, we assume that entrepreneurs care about the characteristics of these regions (though estimates of zero for the regional attributes could reveal that they do not), and that they are sensitive to distances at this relatively fine-grained scale (the average kommune covers 156 km², or 61 square miles).³

Figure 1 also maps the distribution of entrepreneurs across Denmark. The shading on the map indicates into which quartile, of entrepreneurs per 1000 employees in the year 2000, each municipality falls. Lighter shading signifies regions with lower levels of entrepreneurship while darker shading denotes municipalities with higher levels. Although rural areas exhibit both very low and very high rates of entrepreneurship, the largest cities – Copenhagen, Århus,

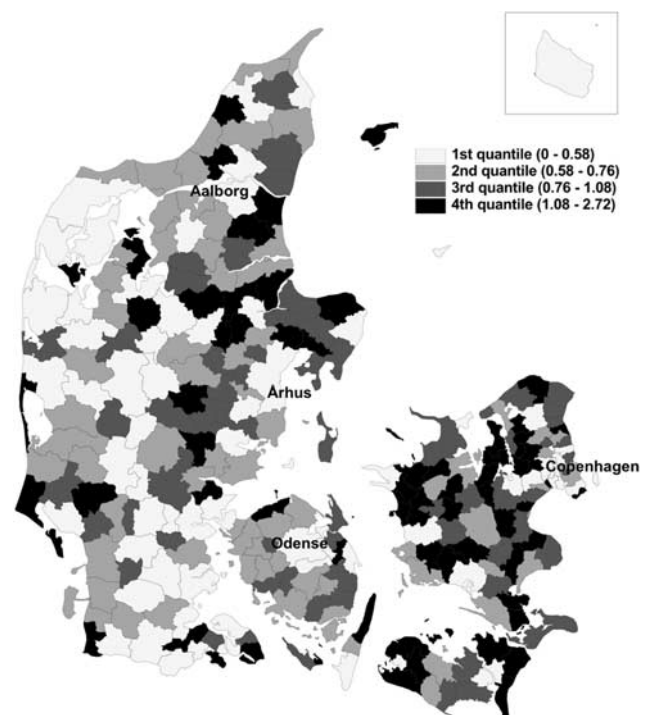


Figure 1 Danish municipalities (kommuner) shaded by entrepreneurship per 1000 employees.

Aalborg and Odense – uniformly have relatively low rates of entrepreneurship.

To assess whether economic or social factors weighed more heavily in producing these patterns, we created a number of measures of these factors.

Economic factors

We began by calculating several variables that might serve as meaningful signals of the economic attractiveness of municipalities to entrepreneurs.⁴

Ln (city size) counts the logged number of employed individuals in a municipality. Since most municipalities have no more than one city or town of any size, one can reasonably consider it a measure of city size. Large cities may prove attractive to entrepreneurs either because they offer cultural amenities that attract employees (Glaeser *et al.*, 2001), such as theater or music, or because the diversity of businesses in these regions promotes cross-industry spillovers (Jacobs, 1969).

Ln (city education) averages the logged number of months of education for all individuals employed in each municipality. Many have suggested that more educated populations attract firms, though this attraction may depend on whether those businesses can usefully employ more educated workers.

Ln (rivals) counts the logged number of firms in the municipality in the same four-digit industry code as the entrant. If entrepreneurs anticipate benefits from agglomeration, regions with a large number of rivals should attract them.

Ln (avg size of rivals) averages the logged size of firms, in terms of number of employees, in the municipality in the same four-digit industry code as the entrant. Larger rivals may produce more intense competition, but concentration may also leave niches available to local specialists (Carroll, 1985).

Ln (related industries) counts the logged number of firms in the municipality in the same two-digit – but not in the same four-digit – industry code as the entrant. This measure should assess even more directly the perceived value of being close to buyers and suppliers.

Exit rate measures the failure rate of similar firms in the region. In particular, it calculates the average proportion of firms in the same four-digit industry and in the same municipality that survived from one year to the next in the previous year. Presumably, entrepreneurs recognizing that some regions offer superior conditions for their sorts of businesses would prefer to locate in those places.

Ln (avg wage) computes the average logged wage for employees in the same four-digit industry and in the same municipality as the firm being founded. In essence, it captures whether the region is a high- or low-wage one. Although one might expect entrepreneurs to prefer low-wage environments, differences in pay may also reflect productivity. Whether business owners can benefit from these wage differentials depends on whether these deviations diverge from differences in productivity.

Social factors

We also created a number of measures to assess the importance of family and friends. Here, however, we faced

an obstacle. Although our data allowed us to locate family, the Danish government does not track each individual's friends. We therefore adopted an indirect approach: We used information on the prior geographic locations of individuals to proxy for the potential availability of friends in each municipality.

Work is an indicator variable that has a value of one if the entrepreneur worked in the municipality in the year before founding his or her firm. To the extent that entrepreneurs form friendships with co-workers from their prior employers, they may wish to remain near to these colleagues.

Ln (distance to home) measures the distance, in logged km, between each municipality and the entrepreneur's home address in the year before the founding of his or her firm.⁵ Since friendships most commonly form among geographically proximate individuals (Stouffer, 1940; Festinger *et al.*, 1950; Feld, 1981), entrepreneurs' home locations should proxy well for the locations of their friends.

Ln (distance to prior residences) calculates the distance, in logged km, between each municipality and places that the entrepreneur has lived between 1980 and the year of founding. For the same reason that one would expect home locations to attract entrepreneurs, one would also expect them to value living near to friends formed in other places that they have lived.⁶ If the entrepreneur lived in more than one location during this period, we averaged the logged distances across these locations.

Ln (distance to parents) calculates the distance, in logged km, between each municipality and the home addresses of the entrepreneur's parents in the year of founding. If the parents lived at separate addresses, we averaged the logged distances across these locations.

Ln (distance to siblings) averages the distance, in logged km, between each municipality and the home addresses of the entrepreneur's brothers and sisters in the year of founding. Table 1 reports descriptive statistics for all of the variables used as predictors of location choice.

Results

The results of our estimates of the determinants of location choice begin in Table 2. Model 1 includes only economic factors. All of these factors have significant effects on location choice, though perhaps not always in the direction that one would have expected *a priori*. Consistent with expectations, entrepreneurs prefer more populous municipalities, more educated labor forces, municipalities that have both more other firms in the same industry and in closely related industries. Surprisingly, they also prefer regions with larger rivals and higher wages – though because concentration may allow for resource partitioning and because these wages may reflect higher average productivity, we cannot really consider either preference irrational.

The most surprising result is that entrepreneurs appear to prefer regions in which businesses of their type have been experiencing higher exit rates. One possible explanation is that entrepreneurs errantly view these places as attractive. They may not consider exit a favorable event. But high exit rates and high entry rates usually go together. Entrepreneurs may observe these high entry rates as

Table 1 Descriptive statistics

<i>Variable</i>	<i>Mean</i>	<i>Std. dev.</i>	<i>Min.</i>	<i>Max.</i>
Ln (city size)	10.577	1.404	7.472	12.927
Ln (city education)	4.950	0.052	4.819	5.081
Ln (rivals)	2.804	1.686	0	6.792
Ln (avg size of rivals)	1.734	0.849	0	6.709
Ln (related industries)	3.521	2.250	0	7.828
Exit rate	0.111	0.092	0	1
Ln (avg wage)	10.289	4.740	0	13.411
Work	0.276	0.447	0	1
Ln (distance to home)	0.937	1.402	0	5.458
Ln (distance to prior residences)	1.644	1.268	0	5.308
Ln (distance to parents)	1.329	1.628	0	5.417
Ln (distance to siblings)	1.433	1.636	0	5.417
Number of startups		15,068		
Number of regions in choice set		271		
Number of startup-region cases		4,083,428		

Table 2 Conditional logit estimates on location choice

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Control group</i>
Ln (city size)	0.419** (0.017)		0.174** (0.024)	0.587** (0.014)
Ln (city education)	1.908** (0.209)		-1.651** (0.301)	1.144** (0.283)
Ln (rivals)	0.521** (0.016)		0.361** (0.022)	0.924** (0.026)
Ln (avg size of rivals)	0.041** (0.013)		-0.005 (0.018)	0.916** (0.015)
Ln (related industries)	0.192** (0.013)		0.251** (0.019)	-0.622** (0.023)
Exit rate	1.264** (0.112)		1.112** (0.145)	2.163** (0.252)
Ln (avg wage)	0.055** (0.008)		0.022* (0.010)	-0.003 (0.015)
Work		1.302** (0.037)	0.756** (0.036)	1.045** (0.028)
Ln (distance to home)		-1.344** (0.012)	-1.308** (0.012)	-0.815** (0.012)
Ln (distance to prior residences)		-0.444** (0.020)	-0.323** (0.020)	-0.465** (0.017)
Ln (distance to parents)		-0.130** (0.017)	-0.222** (0.017)	-0.126** (0.015)
Ln (distance to siblings)		-0.222** (0.019)	-0.091** (0.019)	-0.123** (0.015)
Pseudo R ²	0.17	0.63	0.66	0.58
Log-likelihood	-69,753	-30,931	-28,384	-35,115
Individuals	15,068	15,068	15,068	15,068

Standard errors in parentheses.

Significance levels: †: 10%, *: 5%, **: 1%

indicative of attractive opportunities and either ignore or misinterpret the correspondingly high exit rates. Sørensen and Sorenson (2003), for example, find that entry in television broadcasting in the United States encouraged other would-be entrepreneurs to attempt entry despite the

fact that these earlier entries substantially reduced the attractiveness of the market.

Model 2 reports estimates considering only social factors. Similar to the economic factors, all of the social factors have significant effects on location choice. Here, all of the

coefficients have the expected signs. Entrepreneurs prefer to locate in the same municipalities as their prior employers and to locate close to their homes, their prior residences, and the current homes of their parents and siblings. These effects, moreover, explain much more of entrepreneurs' location choices than do economic factors; model 2 has a pseudo- R^2 more than four times larger than that of model 1.

In model 3, we simultaneously estimated the importance of both economic and social factors. Four changes stand out. First, with one exception – the number of firms in the region in related industries – all of the coefficients are smaller in model 3. To some extent, economic and social factors appear positively correlated. Second, of the economic variables, city size shrinks the most in importance. Larger cities may attract individuals because so many of their family and friends reside there, rather than because these places offer more amenities or cross-industry spillovers. Third, of the social factors, work location declines the most in importance. As noted above, the same (economic) factors that attract entrepreneurs to regions probably drew their prior employers to these places as well. Finally and most intriguingly, the average level of education flips from having a positive to a negative sign when one controls for social factors. Entrepreneurs appear to prefer less educated labor forces.

Although these results suggest that entrepreneurs place greater weight on social relationships than on economic factors, they do not indicate whether these weights stem from the anticipated value of these connections to their businesses or from their preferences for spending time with family and friends. To tease apart these alternatives, we compared the weights attached to social factors across a number of groups for which these connections should have differing economic value. First, we isolated entrepreneurs who had parents that owned business in the same industries that the entrepreneurs themselves entered. These entrepreneurs should have more to gain from locating near to their parents and from being able to access their connections. Second, we compared entrepreneurs to employees. Although employees do sometimes use connections to help them find jobs, they arguably have less to gain economically from these connections. The relationships that matter, moreover, have been acquaintances rather than family and friends (Granovetter, 1974). Third, we explored whether the determinants of location choice varied across the economic sectors that the employees entered. In particular, one might expect social relationships to matter more in the service and high-tech sectors. As experience goods, customers face a great deal of uncertainty in dealing with new service providers. Connections to the local community may therefore be particularly important to sales. In high tech, meanwhile, the need for highly skilled labor means that entrepreneurs must rely more heavily on their networks for recruiting.

Turning to the first subset, less than 8% of entrepreneurs actually have parents that own businesses. Only a small proportion of these parents, moreover, own businesses in the same industries that their children enter. Because of the small number of cases in this subset, we had little power for analyzing the weightings among this sample. Interestingly, though, even in these cases, entrepreneurs located near their parents at essentially the same rate as entrepreneurs

without parents in the industry (~38%). Thus, even in the cases where family connections would appear to offer the largest potential economic benefits to startups, entrepreneurs do not appear unusually sensitive to their proximity.

Entrepreneurs vs employees

To determine whether entrepreneurs differ in their preferences from other individuals, the final column reports a model estimating the importance of the same factors to a control group. Since entrepreneurs are shifting from one job to another, our control group comes from a random sample of employees that changed jobs in 2000. We estimated the effects of the same economic and social factors on those employees' choices of employer locations. The results reveal some interesting differences between entrepreneurs and employed individuals. First, employees find more attractive cities, regions with more, and larger, firms in their industry, and regions with higher wages. Given that they receive wages and have more to gain from having multiple employment opportunities, one might expect them to value these factors more highly. Second, employees place no positive value on proximity to firms in related industries. That fits with the notion that, while these firms might represent important buyers or suppliers for the entrepreneur, they offer no direct benefit to the employee. Entrepreneurs nevertheless appear to place relatively similar weights, on average, on social factors. Although entrepreneurs weight proximity to parents and their current home a little more heavily, employees place somewhat greater value on being close to siblings and past residences.

Industry differences

Table 3 explores heterogeneity in the determinants of location choice across sectors of the economy. For this analysis, we divided the sample into four groups: Financial service firms include those involved in accountancy, banking and brokerage ($N=3664$). Other service firms represent a wide range of industries, including cleaners, clubs and retail sales ($N=7300$). New manufacturing groups a variety of businesses that one might broadly classify as high tech, such as biotechnology, computer hardware and software, and telecommunications ($N=1211$). Old manufacturing, meanwhile, comprises all other manufacturing firms and construction ($N=2893$).

We would call attention to one point here: Entrepreneurs vary relatively little in the valuations that they place on social factors. Once again, the absence of variation suggests that entrepreneurs value these relationships for emotional rather than instrumental reasons. Customers and suppliers dealing with fledgling service providers face far more uncertainty as to the quality of these businesses than those dealing with manufacturers. These service providers, moreover, usually do not have any assets against which they can secure debt and other obligations. Relationships should therefore be far more valuable to entrepreneurs in the service sector – and particularly in financial services. Entrepreneurs in the high-tech sector, meanwhile, rely on connections to recruit early employees. Despite these differences in the value of social relationships across

Table 3 Conditional logit estimates on location choice

	<i>Financial services</i>	<i>Other services</i>	<i>New manufacturing</i>	<i>Old manufacturing</i>
Ln (city size)	0.111* (0.056)	0.087* (0.038)	0.478** (0.064)	0.214** (0.070)
Ln (city education)	-3.813** (0.645)	-0.734† (0.416)	0.413 (0.959)	-1.872* (0.866)
Ln (rivals)	0.558** (0.046)	0.385** (0.032)	0.151* (0.073)	0.188** (0.071)
Ln (avg size of rivals)	0.050 (0.037)	-0.037 (0.028)	0.002 (0.049)	0.002 (0.041)
Ln (related industries)	0.238** (0.040)	0.238** (0.026)	0.363** (0.065)	0.406** (0.071)
Exit rate	1.076** (0.330)	1.560** (0.245)	0.074 (0.341)	1.641** (0.361)
Ln (avg wage)	0.008 (0.023)	-0.028 (0.025)	-0.003 (0.017)	0.027 (0.023)
Work	0.841** (0.078)	0.770** (0.050)	0.808** (0.137)	0.606** (0.090)
Ln (distance to home)	-1.486** (0.027)	-1.138** (0.017)	-1.417** (0.043)	-1.509** (0.032)
Ln (distance to prior residences)	-0.328** (0.044)	-0.378** (0.025)	-0.183* (0.074)	-0.302** (0.053)
Ln (distance to parents)	-0.128** (0.038)	-0.243** (0.023)	-0.158* (0.060)	-0.279** (0.042)
Ln (distance to siblings)	-0.111* (0.044)	-0.071** (0.026)	-0.049 (0.066)	-0.110* (0.048)
Pseudo R ²	0.73	0.61	0.67	0.74
Log-likelihood	-5,591	-15,990	-2,214	-4,224
Individuals	3,664	7,300	1,211	2,893

Standard errors in parentheses.

Significance levels: † : 10%, * : 5%, ** : 1%.

sectors, however, all entrepreneurs place roughly the same weights on proximity to family and friends.

Movers vs stayers

Table 4 reports models that explore two additional dimensions of heterogeneity in the choices of entrepreneurs. The first two columns split the sample into movers and stayers. Stayers are those who founded their firms in the same municipalities in which they worked in the prior year. Movers did not. Separating movers and stayers allows us to determine whether some factors play an unusually strong role in keeping individuals in their current locations and whether others prove particularly attractive to those who decide to move. Perhaps the most interesting differences across these two sets appear in their weightings of economic factors. Those that move appear less attracted to agglomerations and to regions with high exit rates in their industries. These differences may, however, reflect heterogeneity in the entrepreneurs themselves: Many individuals, for example, become entrepreneurs because they lose their jobs (Evans and Leighton, 1989).

Spin-outs vs *de novo* entrants

The next two columns split the sample into spin-outs and *de novo* entrants. Spin-outs are entrepreneurs that found

firms in the same four-digit industries as their prior employers. Despite the fact that spin-outs come from employers in the same industry, they are *less* likely to locate their firms in the same municipalities as these prior employers. But perhaps the most interesting difference between the choices of these two sets of entrepreneurs is that spin-outs appear less attracted to regions with high exit rates in the industry. We see at least two explanations for this result. Both ultimately reflect the idea that spin-outs outperform entrants without prior industry experience because they understand better how to succeed in the industry. One possibility is that location choice represents one dimension on which spin-outs systematically better position their firms. Another possibility is that these locations have lower average exit rates precisely because so many spin-outs call them home. Differentiating between these two accounts, though interesting, would nonetheless require an analysis of performance and therefore falls outside this paper's scope.

Discussion

Why do entrepreneurs tend to locate their firms in close proximity to where they have lived? Does this pattern reflect the underlying economic attractiveness of these regions, the value of the social capital that entrepreneurs

Table 4 Conditional logit estimates on location choice

	<i>Move</i>	<i>Stay</i>	<i>Same industry</i>	<i>Diff industry</i>
Ln (city size)	0.162** (0.026)	0.323** (0.069)	0.197** (0.027)	0.071 (0.060)
Ln (city education)	-0.881** (0.319)	-8.026** (0.900)	-1.679** (0.335)	-1.573* (0.686)
Ln (rivals)	0.318** (0.024)	0.766** (0.062)	0.353** (0.024)	0.381** (0.053)
Ln (avg size of rivals)	-0.015 (0.019)	0.109* (0.049)	-0.017 (0.019)	0.049 (0.042)
Ln (related industries)	0.246** (0.021)	0.293** (0.053)	0.244** (0.022)	0.293** (0.043)
Exit rate	1.010** (0.155)	2.139** (0.428)	1.003** (0.161)	1.756** (0.352)
Ln (avg wage)	0.019† (0.010)	0.051 (0.032)	0.018† (0.010)	0.053† (0.031)
Ln (distance to home)	-1.324** (0.014)	-1.527** (0.032)	-1.329** (0.014)	-1.209** (0.029)
Ln (distance to prior residences)	-0.258** (0.022)	-0.750** (0.052)	-0.332** (0.022)	-0.281** (0.045)
Ln (distance to parents)	-0.220** (0.018)	-0.260** (0.042)	-0.247** (0.019)	-0.159** (0.035)
Ln (distance to siblings)	-0.077** (0.021)	-0.205** (0.049)	-0.074** (0.022)	-0.160** (0.039)
Work			0.619** (0.044)	1.154** (0.066)
Pseudo R^2	0.59	0.87	0.67	0.66
Log-likelihood	-24,934	-3,059	-22,579	-5,749
Individuals	10,907	4,161	12,054	3,014

Standard errors in parentheses.

Significance levels: † : 10%, * : 5%, ** : 1%.

have built up in these places, or the desire of entrepreneurs to live close to family and friends?

Our answer to these questions is that entrepreneurs appear to be embedded in their communities. The economic attractiveness of regions matters, but its importance pales relative to proximity to family and friends in determining where entrepreneurs locate their ventures. Entrepreneurs, moreover, appear to value proximity to family and friends not for the help that those connections might offer to their ventures but for emotional reasons.

Although one might worry that our results apply only to Denmark, studies in other contexts appear consistent with the notion of embedded entrepreneurs. The high value that founders place on being near to family and friends, for example, accords with the fact that Figueiredo *et al.* (2002) estimate that entrepreneurs in Portugal would pay three times higher wages to employees to remain in their home regions. It also fits with the high levels of geographic inertia that Michelacci and Silva (2007) find among Italian entrepreneurs. Studies of founders in the United States suggest similar conclusions (Parwada, 2008). Although we would welcome the replication of our research, nothing suggests that these processes would unfold differently elsewhere.

Our findings have at least two important research implications. First, the fact that entrepreneurs value family

and friends for emotional reasons suggests that the locations of these individuals may offer a source of exogenous variation in where entrepreneurs locate their firms. Attempting to link place to performance has been a difficult task because firms undoubtedly consider the economic attractiveness of regions when deciding where to locate their plants and headquarters. Differences across places in performance may therefore reflect heterogeneity in the firms rather than in the regions (Shaver and Flyer, 2000). Detailed information on the locations of the family and friends of entrepreneurs (and potentially of managers that have substantial input into the placement of facilities) could offer a solution to identifying these performance effects.

Second, our results lend substantial support to theories of the origins and persistence of clusters that emphasize spin-out processes rather than the economic efficiency of these regions. Sorenson and Audia (2000) argue and provide evidence that the clustering of firms in the US footwear industry persists, not because firms benefit from being located near to one another, but because entrepreneurs that spin-out of incumbents found their firms in close proximity to their prior employers, thereby maintaining the cluster. Similar processes have been found to operate in apparel (Staber, 2001), automobiles (Klepper, 2007), biotechnology (Stuart and Sorenson, 2003),

book publishing (Heebels, 2009), tires (Buenstorf and Klepper, 2009), and computer workstation manufacturing (Sorenson, 2005). Our results suggest that this process may hold generally across nearly all sectors of the economy and therefore that these spin-out processes, rather than economies of agglomeration, may account for nearly all of the geographic clustering of industries.

From a public policy point of view, our results suggest that programs designed to lure entrepreneurs to a region might prove inefficient at best. These incentives would need to overcome the value that entrepreneurs place on family and friends and that value appears very high. Although spin-outs may provide a mechanism through which regions can reap rewards from luring large existing firms (Greenstone *et al.*, 2008), the relative immobility of entrepreneurs suggests that governments should pursue policies to stimulate entrepreneurship among the existing population rather than to attract migrating entrepreneurs to the region. Entrepreneurs are not an imported crop; they're home grown.

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Notes

- 1 Sorenson (2003) provides a review of the extensive empirical literature that supports the value of social relationships to entrepreneurs.
- 2 Denmark had 276 municipalities until 1 January 2003, when the five municipalities on the island of Bornholm merged into one. We therefore combined these municipalities for the entire period. We also excluded one municipality: the island of Christiansø located 20 km north-east of Bornholm, which has fewer than 90 residents. Effective 1 January 2007, Denmark reorganized and consolidated its administrative units into 98 kommuner. This change, however, occurred outside of the range of our data and therefore does not affect our analyses.
- 3 As a robustness check, we estimated a set of models defining the choice set at the level of the 33 regions identified as labor markets through observed commuting patterns (Andersen, 2000). Defining the units at that level produced substantively equivalent results. When entrepreneurs do move, they typically move not just away from their former kommune of residence but also outside of their former commuting region.
- 4 Tax rates and unionization rates, two of the more widely studied determinants of location choice among existing firms in the United States, do not vary meaningfully across Denmark, so we could not estimate their influence on this sample of entrepreneurs.
- 5 Although we experimented with a variety of functional forms, a comparison of the logged distance to a 10-piece linear spline showed almost no difference between the two. We therefore used the simpler logged distance in our estimations.
- 6 One might also expect the strength of these emotional attachments to increase with an individual's tenure in the region and to erode over time. In unreported models, we found evidence of both effects. These more nuanced specifications nevertheless had little effect on the predictive power of our

models, so, in the interest of simplicity, we report models that treat all past residences as equally attractive.

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