

Peer Effects and Entrepreneurship

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Peer Effects and Entrepreneurship

Abstract

We examine whether the likelihood of entrepreneurial activity depends on the prior career experiences of an individual's co-workers. We argue that peers may increase an individual's likelihood of becoming an entrepreneur through two channels: by increasing the likelihood that an individual will perceive entrepreneurial opportunities, and by increasing his or her motivation to pursue those opportunities. Our analysis uses a unique panel dataset that allows us to track the career histories of individuals across firms. We find that an individual is more likely to become an entrepreneur if his or her co-workers have been entrepreneurs before, or if the co-workers' careers involved frequent movement between firms. Peer influences appear to be substitutes for other sources of entrepreneurial influence: the effects are strongest for those without exposure to entrepreneurship in their family of origin. These effects are robust to attempts to address concerns about unobserved heterogeneity bias.

Why do some people become entrepreneurs? A simple conceptualization suggests that entrepreneurship results from the confluence of opportunity and motivation. The perception of opportunities is a necessary condition: entrepreneurship depends on differential access to information about economic opportunities and to the resources needed to launch a new venture (Aldrich 1999; Shane 2003). Opportunity is not sufficient, however: entrepreneurial motivation accounts for why some people forgo paid employment to pursue entrepreneurial opportunities, while others -- confronted with the same opportunities -- do not (Shane, Locke and Collins 2003).

Both motivation and opportunity are conditioned by social context. Access to private information about opportunities, and contacts with resource providers, accrue to occupants of particular social positions (such as workers in prominent organizations, or in particular regions) and are often mediated through personal relationships (Shane and Khurana, 2003; Romanelli and Schoonhoven, 2001; Sorenson and Audia 2000; Burton, Sørensen and Beckman 2002). Similarly, while entrepreneurial motivation may stem in part from individual dispositional factors (Shane, Locke and Collins 2003), the social context plays an important role in shaping career aspirations and in legitimating different career choices (Carroll and Mosakowski 1987; Halaby 2003; Stuart and Ding 2006; Sørensen 2007b).

A natural consequence of this view is that entrepreneurial activity should be seen as the outcome of social influence processes. Therefore, to understand why some people become entrepreneurs, it is helpful to consider the influences of the people they interact with. Consistent with this, substantial research shows that the family of origin influences the propensity of individuals to become entrepreneurs, and that this influence arises because parents shape both access to resources and entrepreneurial motivation (Carroll and Mosakowski 1987; Dunn and Holz-Eakin 2000; Sørensen 2007b). Considerably less research has been done, however, on the role that non-family peers play in shaping entrepreneurial activity.

In this paper, we focus on how workplace peers -- co-workers -- affect the likelihood that someone will leave paid employment for entrepreneurship. Since attitudes and information are often mediated by direct interpersonal contact, and a substantial portion of an individual's time is spent at the workplace, we suspect that the composition of an individual's peer group at work will play an important role in influencing the decision to become an entrepreneur. We focus on workplace peers (as opposed to friendship relations, or peers in other settings) for several reasons. First, in modern economies, paid employment is one of the dominant realms of social interaction, and the one in which people are most likely to be exposed to a diversity of social influences. Furthermore, the workplace is an important but understudied source of entrepreneurial activity: the vast majority of entrepreneurs launch their new ventures following a period of employment in established organizations (Burton, Sørensen and Beckman 2002; Gompers, Lerner and

Scharfstein 2005). This fact has sparked a number of studies of how structural characteristics of employers shape both the level and the nature of entrepreneurial activity (Freeman 1986; Romanelli and Schoonhoven 2001; Gompers, Lerner, and Scharfstein, 2005; Dobrev and Barnett, 2005; Sørensen 2007a). These studies have not, however, considered the characteristics of the people who work in these settings and, in particular, to how an individual's co-workers may influence the decision to become an entrepreneur. Finally, a focus on workplace peers has methodological advantages, compared to studying the influence of self-reported friends: people have less influence over who their co-workers are, and hence co-workers are more likely to expose them to ideas and information that they did not intentionally seek out. (As we discuss below, this does not mean that studying co-workers resolves endogeneity concerns – far from it. We address these concerns in our analyses.)

We focus our attention on a particularly salient aspect of what peers bring to the workplace: their career experiences. Prior research has shown that an individual's career experiences affect his or her own entrepreneurial behavior and outcomes through their impact on attitudes and motivation towards entrepreneurship (Saxenian 1994), as well as access to information, ideas and resources (Klepper 2001; Sorenson and Audia 2000; Shane 2000; Burton, Sørensen and Beckman 2002). We argue that these career experiences not only exert a direct effect on the individual, but also “spill over” to co-workers by influencing the informational and normative environment in which individuals make entrepreneurial entry decisions. We focus specifically on two dimensions of the career histories of workplace peers – their recent entrepreneurial

experience and their recent inter-firm mobility – and develop arguments linking these experiences to an individual’s entrepreneurial motivation and opportunities.

Testing claims about the influence of co-workers empirically poses two important challenges. First, a convincing test of these claims demands unusually comprehensive data characterizing the work histories of an individual’s workplace peers. This data challenge is especially daunting given the fact that entrepreneurship is such a rare event, so that sufficient statistical power demands large samples of potential entrepreneurs, and hence correspondingly larger amounts of information on each of these individuals’ co-workers. The second challenge is inferential. With data in hand, it may be straightforward to establish a correlation between certain peer characteristics and rates of entrepreneurship. But this simple correlation is potentially spurious, on three grounds: 1) the observed peer effects may reflect unobserved differences in firm characteristics that influence the kinds of people who work for a firm; 2) they may reflect unobserved differences in individual dispositions that drive both the choice of employer and eventual entry into entrepreneurship; and 3) the observed peer effects may in fact be due to institutional factors in the region where the firm is located.

We address these challenges by using a unique matched employer-employee panel dataset from Denmark to examine the relationship between the characteristics of an individual’s workplace peers and the propensity to become an entrepreneur. Our dataset has annual observations on the entire Danish labor market, allowing us to track individuals as they move between spells of employment and self-employment over time.

In addition, since we are able to match individuals to firms, we also know who each individual's colleagues are in every year, and can measure their prior career experiences. The richness of the data allows us to directly assess the posited relationship between peer-effects and entrepreneurship as well as to rule out many potential spurious correlations that might be at play.

The remainder of this paper is organized as follows. In the next section we develop our theoretical arguments linking the career experiences of workplace peers to entrepreneurship, and consider alternative arguments that suggest the observed associations may be spurious. We then discuss our data sources and the construction of the sample for our analysis, as well as the construction of measures. Following a discussion of the findings, we briefly consider the implications of the results for our understanding of entrepreneurship.

PEER EFFECTS AND ENTREPRENEURSHIP

Entrepreneurship involves the perception of new business opportunities and the mobilization of resources to exploit those opportunities (cf. Venkatraman, 1997; Shane, 2003). Entrepreneurship is also, most commonly, a labor market transition: leaving paid employment (or unemployment) in order to organize, operate and assume the risk of a new business venture (Aldrich, 1999; Casson, 2003; Shane, 2003; Parker, 2004). As such, explaining why some people are more likely to become entrepreneurs than others is a question of explaining why some people are more likely to be able to perceive and

exploit entrepreneurial opportunities, and why some are more motivated to pursue those opportunities.

Peer social influence processes can be expected to play an important role in both opportunity identification and motivation to choose entrepreneurship as a career. Ample research suggests that peers play a central role in the diffusion of ideas, attitudes and behaviors across a wide range of domains. Friends and acquaintances influence the adoption of new technologies and the spread of managerial fads and fashions (Coleman, Katz and Menzel 1966; Burt 1987). An extensive literature on neighborhoods has shown the profound effects that neighborhood peers can have on individuals (Mayer and Jencks 1989; Katz, Kling and Liebman 2001), while the educational literature has shown that peer quality and behavior are important determinants of student outcomes (Hallinan and Sørensen 1983; Sacerdote 2001). Finally, workplace peers have been shown to have a measurable impact on employee shirking and productivity (Ichino and Maggi 2000). Consistent with this evidence, several recent papers have attributed regional and firm-level variation in the rate of entrepreneurship to (unobserved) peer influence processes at the individual level (Saxenian 2000; Klepper 2001; Gompers, Lerner and Scharfstein 2005).

Peers can have a wide variety of characteristics that influence their co-workers attitudes and decisions. In terms of influencing decisions to enter entrepreneurship, however, we believe that some of the most important characteristics individuals bring to the workplace

are derived from their career experiences. We focus on two particularly relevant career experiences: prior entrepreneurial experience, and the extent of prior inter-firm mobility.

Exposure to co-workers with entrepreneurial experience can influence both entrepreneurial opportunity and motivation. Working with former entrepreneurs should increase entrepreneurial opportunity identification, for several reasons. First, interaction with former entrepreneurs may provide insight into the skills needed to launch a new venture, as well as a way to learn some of those skills. Thus Gompers, Lerner and Scharfstein (2005: 612) argue that when working with colleagues who have been involved in startups, “employees learn from their co-workers about what it takes to start a new firm.” Since part of recognizing an entrepreneurial opportunity involves having a sense for how to exploit the opportunity, such informal training should make people with entrepreneurial colleagues more likely to identify entrepreneurial opportunities. Former entrepreneurs may also serve as a sounding board for the identification and evaluation of opportunities, and may talk about market conditions and trends in ways that make their co-workers more sensitive to entrepreneurial possibilities.

In addition to making individuals more likely to identify opportunities, spillovers from former entrepreneurs may also make opportunities more attractive. Economic models of entrepreneurship (e.g., Evans and Jovanovic 1989), for example, suggest that the value of an opportunity (and hence the likelihood of entry) depends on the prospective entrepreneur’s expected entrepreneurial abilities. In this case, skills and knowledge acquired through interaction with former entrepreneurs should make more entrepreneurial

opportunities attractive. Working with former entrepreneurs may also create social capital advantages, as these colleagues may share contacts with relevant resource providers. By facilitating access to resources, such contacts effectively lower the cost of entrepreneurial entry and hence increase the value of entrepreneurial opportunities.

We believe that entrepreneurial colleagues also exert an influence on entrepreneurial motivation. Given that these former entrepreneurs are current co-workers, and hence occupy a similar social position, contact with them should play a demystifying role and help convince some individuals that they have what it takes. By contrast, people without contact to individuals with entrepreneurial experience may believe that launching a new venture demands a unique constellation of abilities. Furthermore, former entrepreneurs may shape the aspirations of their co-workers by acting as role models. In particular, the example set by these individuals may play an important role in helping individuals construe an alternative to submitting to the authority relationship inherent in paid employment.

Hypothesis 1: Individual rates of entrepreneurship will be higher in work environments where a greater share of co-workers has prior entrepreneurial experiences.

It is worth noting that co-workers with entrepreneurial experience will, by definition, no longer be full-time entrepreneurs. In many, if not most, cases, these individuals will have sought paid employment due to the failure or poor performance of their entrepreneurial ventures. One might therefore wonder why the presence of “failed entrepreneurs” would induce others to enter entrepreneurship. While a co-worker’s scars of entrepreneurial

failure may somewhat dampen entrepreneurial aspiration, we suspect that failed entrepreneurs will on balance encourage attempts at entrepreneurship. In part, this is because many of the mechanisms through which former entrepreneurs influence exposure to opportunities (e.g., access to information) should operate regardless of the success or failure of the entrepreneur. Furthermore, failed entrepreneurs may increase entrepreneurial motivation, despite their lack of entrepreneurial success. In part this may be because failure can be attributed to idiosyncratic forces or bad luck, as opposed to revealing anything intrinsically negative about entrepreneurship. Furthermore, the former entrepreneur's presence in the workplace may be reassuring to risk-averse individuals concerned about their prospects in the event that they fail. Entrepreneurial colleagues should therefore play a role in reducing the stigma of failure. Finally, the fact that an individual has left entrepreneurship for paid employment does not mean that he or she regrets the attempt at independence, or no longer feels that self-employment is preferable to paid employment. Consistent with this, Sørensen (2007b) finds that self-employed parents have lasting effects on their children's propensity to enter self-employment, even if the parents' stint in self-employment is short-lived.

Even when co-workers do not have prior entrepreneurial experience, their career histories may play an important role in stimulating entrepreneurial activity. In particular, we suspect that the degree to which co-workers have moved between other employers will increase exposure to and identification of entrepreneurial opportunities. Scholars have argued that the ability of individuals to identify entrepreneurial opportunities is associated with the diversity of individuals' career experiences (Shane 2000; Shane and

Khurana, 2003). Shane (2000), for example, found that perceptions of the entrepreneurial opportunities present in a particular innovation varied with individual training and career experiences. Saxenian (1990; 1994; 2000) argues that the success of Silicon Valley in relation to Route 128 in the 1980s was driven at least in part by differences in the rates of inter-firm movement. In Saxenian's account, firms in Silicon Valley were comprised of individuals who frequently moved between jobs in different firms and industries, gaining new knowledge and at the same time exposing their colleagues to new ideas, networks, and startup experience. In describing this process in Silicon Valley, Saxenian writes that:

Individuals move easily from semiconductor to disk drive firms or from computer to network makers. They move from established firms to start-ups (or vice versa)... And they continue to meet at trade shows, industry conferences, and the scores of seminars, talks and social activities organized by local business organizations and trade associations. In these forums, relationships are easily formed and maintained, technical and market information is exchanged, business contacts are established, and new enterprises are conceived. This decentralized and fluid environment also promotes the diffusion of intangible technological capabilities and understandings. (Saxenian 1990: 96-97)

These transfers of ideas and opportunities due to job mobility were, according to Saxenian, a key factor differentiating the firms in Silicon Valley from the large bureaucratic organizations in Route 128 that, by virtue of their structure, did not encourage the mobility of employees between jobs. Building on Saxenian's work, Fallick, Fleischman and Rebitzer (2006) look at the relationship between labor mobility and entrepreneurship at the regional level. They find that Silicon Valley had both higher levels of inter-firm mobility and higher rates of entrepreneurship than other regions in the US.¹

¹ However, their analysis is at the regional level and does not directly examine the role of co-workers' prior mobility on an individual's propensity to become an entrepreneur.

Hypothesis 2: Individual rates of entrepreneurship will be higher in work environments where co-workers have had greater rates of inter-firm mobility in the past.

In our hypotheses, the influence of peer career experiences arises through a vicarious learning process, through which an individual might learn about either the nature of entrepreneurship or about specific market or business conditions due to their external environment. One way to test the support for our claimed mechanisms is to ask whether factors that are known to increase entrepreneurial opportunities and motivation act as substitutes for the career experiences of an individual's co-workers. One such factor is parental self-employment. Children of the self-employed have been exposed to entrepreneurial role models in the family of origin, and should therefore be more likely to view entrepreneurship as a viable career option (Carroll and Mosakowski 1987); they also attach greater value to entrepreneurial job characteristics (Halaby 2003) and can benefit from resources and information relevant to entrepreneurship. Interacting with former entrepreneurs in the workplace should have less of an impact on their attitudes toward entrepreneurship, or on how much they know about what it takes to be an entrepreneur.²

² One might ask why we have not specified a parallel hypothesis, namely that the influence of peer inter-firm mobility should be offset by experiences that have led some individuals to be exposed to more diverse experiences from sources besides their coworkers. We do believe this to be the case, and indeed in separate models we do find support for such a negative interaction effect when looking at an individual's own recent job mobility as a proxy for this diversity in experience. However, we find this pattern difficult to interpret cleanly because unlike parental self-employment, an individual's history of job mobility may be endogenous to entrepreneurial intentions. The test is therefore not as informative with respect to the mechanisms at play; the negative interaction may be due to substitution of the information provided by job-hopping peers, but may equally plausibly arise if people who have decided to become entrepreneurs are less affected by peer influences.

Hypothesis 3: The positive impact of prior entrepreneurial experiences among workplace peers on the rate of entrepreneurship will be reduced for individuals with self-employed parents.

METHOD

Our theoretical arguments imply that employees are more likely to become entrepreneurs after being exposed to certain types of peers, distinct from their individual inclination towards becoming an entrepreneur. This notion – that exposure and spillovers in among co-workers have an impact on rates of entrepreneurship – has broad intuitive appeal and is also supported by numerous anecdotes.³ Yet existing research does not speak convincingly to the operation of peer effects in the entrepreneurial process (Fallick, Fleischman and Rebitzer, 2006; Gompers, Lerner and Scharfstein, 2005; Saxenian, 1990). In particular, the evidence for peer effects in these studies is based on regional or firm-level data, and hence is subject to potential ecological inference fallacies. Furthermore, these studies do not directly measure peer group characteristics, and instead rely on proxies such as regional mobility rates, or firm age and size.

A direct test of the association between peer characteristics and entrepreneurship rates is important because prior studies that invoke peer effects but measure firm (or regional) characteristics are subject to the concern that the results may be due to omitted variables

³ The classic such example is that of Fairchild Semiconductor (cf. Gompers, Lerner and Scharfstein 2005). Fairchild was founded in the late 1950s by 8 engineers who left Shockley Semiconductor to start their own firm. While Fairchild was a successful firm in its own right, at least 23 of the 67 firms that entered the semiconductor industry in the subsequent 20 years were founded by entrepreneurs who were previously employed at Fairchild (and were humorously referred to as “Fairchildren”). What is important about this anecdote is that Fairchild is believed to have spawned the number of firms it did because of the entrepreneurial environment that it created for its employees, much of which was believed to have come from the employees’ peers.

at the firm (or regional) level. For example, Gompers, Lerner and Scharfstein (2005) attributed the higher rates of entrepreneurship in young, venture capital backed firms to the effects of entrepreneurial exposure. Yet such firms may spawn more entrepreneurs for many reasons that are unrelated to the effect that peers have on an employee's propensity to become an entrepreneur; for example, start-ups give their employees operational experience in a range of different job functions – a factor that has been associated with increased rates of entrepreneurship (Lazear 2005). Similarly, Klepper (2001) argued that entrepreneurial spawning from firms may be associated with the propensity of employees to disagree with the senior management about the strategic direction of firms. The propensity to disagree about the strategic direction of a firm may also be correlated with the age or the size of firms. For example, the strategic direction of firms may be less clear for young, more “entrepreneurial” firms. Measuring the characteristics of peers directly and relating them to individual rates of entrepreneurship will help to allay such concerns.

However, direct tests of the peer effects hypotheses remain subject to inferential concerns. The central question is whether this association is in fact genuine, or whether it is driven by selection at the individual, firm or regional level. Consider the following three cases:

- Genuine peer effects: an employee exposed to peers with prior entrepreneurship experience develops important leads, is more motivated to pursue these ideas and thus is more likely to become an entrepreneur.
- Selection at the firm level: several individuals with entrepreneurial inclinations are attracted to a firm with particular attributes (e.g. a creative firm culture, or a firm policy where the firm promotes entrepreneurship among its employees), but these individuals do not benefit from exposure

to each other. If these firm attributes lead to higher rates of entrepreneurship, a spurious peer effect would result because of the type of individuals that selected into the firm. Similarly, firms located in regions that are friendly to entrepreneurs (say due to tax or employment policy) will likely have more prior entrepreneurs and more people leaving to become entrepreneurs for reasons unrelated to true peer effects.

- Selection at the individual level: an individual who wants to become an entrepreneur goes to work for certain firms precisely because his co-workers might be able to help him gain exposure and insights into becoming a new entrepreneur. However, it is only the individuals who proactively seek out the benefits from their peers and select into specific firms who gain from peer effects.

These different alternatives clearly have important implications for our understanding of entrepreneurial dynamics. For example, although each of the three processes leads to a correlation between the characteristics of an individual's peers and his propensity to become an entrepreneur, only the first of the three would respond to a policy change that tried to boost entrepreneurship by encouraging those with prior entrepreneurial experience to work for firms in a given region. Distinguishing between these different alternatives is therefore a central task of this paper.

In order to address the possibility that regional variation in institutions favoring entrepreneurs may account for the spurious relationship between peer characteristics and entrepreneurship, we include regional (county-level) fixed effects in all our regressions. All our estimates are therefore "within-county" and therefore explicitly control for unobserved variation at the regional level that may be driving our results.

We next consider a strategy for addressing the possibility that the peer measures are endogenous to unobserved firm characteristics. As a first step, we create peer measures at the establishment-level to reflect the fact that while an individual may choose to join a specific firm, they likely have less control over which establishment within that firm they work at. Ideally, we would also like to include establishment-level fixed effects. However, establishment-level fixed effects are identified only when at least two individuals (in different years) leave the establishment to become entrepreneurs. Given the low transition rate to entrepreneurship, there are very few establishments where this is the case, and those where this is true will tend to be larger in size than those where it is not. This difference in the types of establishments where fixed effects are identified compared to where they are not is in violation of a key assumption of fixed effects models.

We therefore employ an indirect strategy by partitioning our peer measures into fixed and time varying components. First, we measure the peer characteristics at the time the focal individual enters the firm. Second, we create a time-varying measure based on the characteristics (i.e., prior entrepreneurial experience and inter-firm mobility) of each individual who joins the workplace during the focal individual's tenure. The peer characteristics measured at the time of entry into the firm capture any fixed, unobserved characteristics of the firm that influence the baseline level of the entrepreneurial exposure and opportunity identification measures. Since these baseline levels may be driven by unobserved characteristics of the firm, we attach no interpretation to them; instead we focus on the effects of changes in peer characteristics. By partitioning the measures in

this way, we are able to identify a potential peer effect off of any changes in peer characteristics during an individual's tenure with the firm.⁴

Finally, to address the possibility that the estimated effects of peer characteristics are biased by unobserved heterogeneity in fixed individual characteristics, we again adopt a fixed-effects estimation strategy. We estimate discrete-time hazard rate models using conditional logit models, as this is the nearest approximation to including individual fixed effects in a hazard rate model (Allison and Christakis 2006). These models estimate the rate of entrepreneurship using within-career variation in individual and firm characteristics. As with all fixed effects models, they are identified only in instances where there is variation in the outcome of interest. In this case therefore, these models are only estimated on the set of individuals who eventually transition to entrepreneurship.⁵

⁴ This identification strategy assumes that the relevant unobserved firm characteristics are fixed over the history of the focal individual's attachment to a firm. We find this assumption reasonable, but cannot rule out the possibility that changes in the peer measures may be driven by unobserved changes in firm policies, etc.

⁵ While individual fixed effects models are very useful in this context, we should note two important limitations. First, the use of a fixed-effects estimator only addresses the issue of fixed unobserved heterogeneity among individuals. It leaves open the possibility that people's preferences for entrepreneurship may vary in unobserved, time-varying ways that also impact the choice of employer prior to entrepreneurial entry. Second, the nature of the conditional fixed-effects estimator in a hazard rate context limits the range of time-varying individual characteristics that can be controlled. In particular, the conditional fixed effects estimator will lead to biased estimates of any variables that are correlated with time (Allison and Christakis 2000). This is a consequence of the fact that when studying a non-repeatable event, such as the first transition to entrepreneurship, the event necessarily occurs at the end of the observation period. Duration at risk is therefore a perfect predictor of the event, and any variable that is correlated with duration at risk will appear to be correlated with the hazard rate, even if the true correlation is zero. This fact rules out a wide range of variables plausibly related to the decision to enter entrepreneurship, including such factors as income and wealth, since they tend to increase with time.

Data

We analyze data from the Integrated Database for Labor Market Research in Denmark, which is maintained by the Danish Government and is referred to by its Danish acronym, IDA. This database has a number of features that makes it attractive for this study. First, it is comprehensive: all people legally residing in Denmark in a given year are included in the government registers from which the database is assembled. Individual characteristics are recorded in IDA on an annual basis, which means that IDA amounts to an annual census of the population of Denmark.

Second, IDA covers a wide range of phenomena with respect to labor market status, so that it tracks the firm, industry, and region that an individual works in, as well as their occupation status -- so that it is possible to know whether an individual is employed, unemployed or self-employed (among other occupation codes). In addition, the database has a range of other individual characteristics that serve as important controls in studies of entrepreneurship (such as their age, educational qualifications, annual income, wealth, marital status and number of children).⁶

⁶ Since such detailed data raises issues about confidentiality, researchers are not allowed unfettered access to IDA, but must instead request particular extracts from the larger database. The analyses for this paper come from an extract that was created by identifying all individuals who were living in Denmark in 1994 and were between the ages of 15 and 74. This is a population of 3.9 million individuals. For all of these individuals, relevant information from IDA was collected for each year from 1980 until 1997. It should be noted that this design means that the extract only covers the entire population in 1994. In other years, the extract does not capture people who were not in the population in 1994, for example because they died or emigrated before 1994. This type of attrition is likely more serious for older cohorts, and so does not pose particular concerns for the current analyses.

Third, IDA is longitudinal panel data, with annual observations starting in 1980; the data for this study end in 1997. The panel format is particularly attractive as it allows us to study entry into entrepreneurship, rather than just observing a cross-sectional correlation between entrepreneurship and other factors. Further, the longitudinal nature of the data allow us to construct rich measures of individuals' career histories which can then be used as independent variables explaining their colleagues' entry into entrepreneurship.

Finally, the design of IDA allows individuals to be linked according to a variety of relevant characteristics. For example, employees can be linked to their employers, a fact that allows one to study which other employees an individual came in contact with during their tenure with a given firm. It is this unique matched employer-employee nature of the data that allows us to study the role of peer characteristics in impacting rates of entrepreneurship.

Our sample is constructed with two opposing needs in mind. On the one hand, we want to generate rich measures of individual career histories that will be used as explanatory variables. As these are explanatory variables, they need to have occurred *prior* to the time that we study entry into entrepreneurship. On the other hand, we want to study entry into entrepreneurship over a number of years, as entrepreneurship is a rare event (and thus multiple years will generate better power in the regression) and because we do not want our results to be driven by the entry rates in any given year (which may be caused by other factors we cannot observe but possibly correlated with our explanatory variables).

We therefore construct a sample of individuals at risk of entering into entrepreneurship between 1990 and 1997. Since the dynamics of serial entrepreneurship are likely different from the initial transition into entrepreneurship, we exclude individuals with a prior history of entrepreneurial activity between 1980 and 1990 in order to be conservative. Because we do not have data on employment status prior to 1980, we limit the sample to individuals between 16 and 40 years of age in 1990, in order to more reliably exclude individuals with prior self-employment experience. Furthermore, because we wish to observe individuals and their peers during their entire history with a particular employer (until entry into entrepreneurship or censoring), we limited the sample to individuals who were newly hired with their employer in 1990 and follow these individuals until they enter entrepreneurship or the data are censored. We exclude from our sample people employed in the primary sector (agriculture and extractive industries) and in industries dominated by the public sector as the labor market dynamics in these sectors are likely very different, and in order to maintain comparability with studies of entrepreneurship in the private sector.⁷ Lastly, we exclude individuals who worked for a new employer in 1990, since these individuals may themselves be entrepreneurs rather than employees at risk of becoming entrepreneurs. There are 282,911 individuals in the estimation sample.

Measurement

⁷ Our main results are essentially unchanged when the public sector is included.

Transitions to entrepreneurship. We rely on two types of data to measure transitions to entrepreneurship. The first source is the occupational classification scheme employed by Statistics Denmark. This classification scheme differentiates between a wide variety of labor force attachments, including employment with established firms, unemployment, schooling, not in the labor force, and self-employment. Statistics Denmark employs two primary categories for self-employment. The first captures individuals who are unincorporated proprietors with employees; the second captures self-employed individuals with no employees. We treat entry into either of these two categories as transitions to entrepreneurship.

While identifying proprietors or owners of unincorporated businesses is easy (as outlined above), we cannot directly identify individuals who found incorporated ventures, due to limitations in the data sources. We therefore attempt to capture such transitions by taking advantage of the fact that the founders of incorporated ventures appear as employees of the new ventures (unless they are passive investors). Individuals who are employees of new firms are therefore coded as entrepreneurs. We assume that all individuals who are employed in new firms with less than three employees are entrepreneurs; in larger firms we only consider those individuals who are top managers or directors to be founders. In the analyses presented below, we pool all three of these types of entrepreneurial entry into a single transition.

We treat transitions to entrepreneurship as censored if the individuals in question experienced a period of unemployment between their observed employment in one year

and their subsequent self-employment the next year. Similarly, we censor transitions to entrepreneurship that occur simultaneously with the failure of the individual's employer.

Measuring peer characteristics

For each of the focal individuals in the sample, we calculate measures of peer characteristics for each year between 1990 and 1997 (given that they are employed in a given year). As discussed above, we distinguish between two different characteristics of peers for our analysis: prior entrepreneurial experience and prior inter-firm mobility. In order to measure peer entrepreneurial experience, we first identify every workplace that the focal individual worked in for every year over the period 1990-1997. We then identify all of the focal individual's co-workers in each of those years. For each of these co-workers, we compute the number of years each of these colleagues had been self-employed in the preceding five years.⁸ Our measure of entrepreneurial exposure is then the average number of years (of the previous 5 years) the focal individual's peers were entrepreneurs. This measure potentially changes yearly and is different for each focal individual. Its maximum value is five (indicating that all of the peers had spent the preceding five years as entrepreneurs), and the minimum is zero (indicating that none of the peers have any recent entrepreneurial experience).

We use the observed inter-firm labor mobility of co-workers as a proxy for diversity in knowledge relevant to the identification of entrepreneurial opportunities. We measure the average number of different firms that workplace peers worked for over the preceding

⁸ The choice of a five-year window is somewhat arbitrary, but reflects an assumption that the impact of entrepreneurial experience declines with time.

5 years. As with the other peer measure, the maximum value of this variable can take is five (if every colleague changed employers in every year) and the minimum is zero.

Our measures of peer characteristics have a common feature: we cannot directly identify the peers of a focal individual in our sample. Stated differently, we cannot determine how frequently the focal individual comes into contact with a particular co-worker in the workplace; rather, our measures weight all co-workers equally. This constraint is imposed by the archival nature of the data. One implication of this is that the reliability of our peer-measures decline with establishment size. In small workplaces, our peer measures likely do a good job of capturing the characteristics of the people the focal individual interacts with on the job; as workplace size increases, this is less true, since the measure then captures the peer characteristics of the hypothetical average individual in the establishment. Because of this limitation of our measure, we directly control for establishment size in our models, and also focus our analysis on those establishments that have no greater than 25 employees.⁹

Despite the apparent limitation in directly measuring an individual's peers, it is important to note that even with more granular data on an individual's network, we would still choose to focus on a broad set of coworkers rather than self-reported interaction partners.

Relying on an individual's self-reported network raises endogeneity concerns:

⁹ This assumption is less stringent than it would seem like at a first pass. In our sample, only 11% of establishments have more than 25 employees. Similarly, the US Census Bureau estimates that only 10% of establishments have over 20 employees. Moreover, since our peer characteristics are calculated at the establishment level, firms with more than 25 employees may still be represented in the sample (if individual workplaces have fewer than 25 employees).

individuals may self-report being part of a network of more entrepreneurial peers precisely because they are entrepreneurially inclined. By focusing on the risk set rather than the self reported network, our analysis is less susceptible to this concern. Our measures allow for people to be influenced by their peers, even if they do not choose to be friends with them.

RESULTS

We begin by considering the bivariate relationships between the career experiences of workplace peers and the individual rate of entry into entrepreneurship. Figure 1 displays the relationship between exposure to entrepreneurial peers and the rate of entrepreneurship, by establishment size. We see that compared to workers who do not have colleagues with prior entrepreneurial experience, those who do are substantially more likely to become entrepreneurs. This is particularly true in smaller establishments; the relationship between entrepreneurial exposure and entry rates attenuates as workplace size increases. Stated differently (and consistent with our discussion in the previous section), the relationship is strongest where we suspect the measure is most accurate. In very small establishments, the presence of entrepreneurial peers almost doubles the rate of entry, while the relationship is substantially more modest in large establishments. In light of this pattern and as discussed above, we focus our analyses on establishments with 25 or fewer employees.

Figure 2 presents the bivariate relationship between inter-firm mobility and entrepreneurship rates by establishment size. Since levels of inter-firm mobility are

higher than the level of entrepreneurial experience, we dichotomize the measure at the median of the observed distribution of peer mobility. We see the same pattern as in Figure 1: the rate of entrepreneurship increases as the level of inter-firm mobility increases. As in the case of entrepreneurial exposure, this effect is stronger in smaller firms, where our measure does a better job of characterizing the focal individual's actual peers. The results in Figure 2 are therefore consistent with Hypothesis 2.

The bivariate results in Figures 1 and 2 are naturally subject to many caveats. To further investigate the empirical support for peer effects and to control for important covariates of entrepreneurship, we turn to multivariate models. Since we have panel data, we estimate discrete-time event history models of the transition to entrepreneurship using logistic regression. We control for a wide variety of individual attributes including the individual's own prior job mobility, labor force experience, education, wealth and income, parental self-employment and demographic characteristics. We also control for characteristics of the workplace, such as establishment size, firm age, number of establishments in the firm, and industrial diversification of the firm. Finally, we include fixed effects for industry, region and year in every model.

Table 1 presents the estimated effects of our two measures of peer characteristics in models with the full set of control variables, as well as fixed effects for industry, regions and years. Both the entrepreneurial experience and the inter-firm mobility measures have the hypothesized positive effects on the rate of entrepreneurship, when entered singly as well as jointly. We therefore find support for Hypotheses 1 and 2. Individuals are more

likely to enter into entrepreneurship if they have co-workers with prior entrepreneurial experience. Similarly, the likelihood of entering entrepreneurship grows as the inter-firm mobility of an individual's co-workers increases.

The fourth model in Table 1 tests Hypothesis 3, the claim that the effects of entrepreneurial peers should be attenuated for individuals with self-employed parents. We find evidence of this as well; indeed, we cannot reject the null hypothesis that the effect of entrepreneurial peers is zero for children of self-employed parents ($\chi^2 = 2.13$, 1d.f, $p < 0.14$). This is consistent with the notion that entrepreneurial peers and self-employed are substitute sources of entrepreneurial motivation and opportunity.

One potential concern with these results is that prior entrepreneurial experience or inter-firm mobility of peers may be associated with a general increase in the propensity to leave the firm (say because these peers make for bad colleagues) and that the increase in rates of entrepreneurship we see is just a manifestation of this broader labor market phenomenon. In Model 5, we therefore report the results of transition into entrepreneurship conditional on a turnover event (i.e. restricting the sample to observation where the individual leaving the firm). If entrepreneurship was just part of a broader trend towards leaving the firm, we should not see a differential peer effect on transitions to entrepreneurship, conditional on a turnover event happening. In fact, we

see that the association continues to hold, lending credence to our interpretation that the career experiences of peers influence entrepreneurial motivation and opportunity.¹⁰

We turn now to consider the inferential challenges noted earlier: that these results may reflect the influence of unobserved selection processes rather than the influence of peers per se. In Table 2 we attempt to control for selection at the firm level by partitioning our measures of peer characteristics into fixed and time-varying components. As before, these models include the full set of control variables in Table 1. In general, the estimates in this table reinforce the conclusions drawn from Table 1. The primary difference lies in the effects of changes in peer entrepreneurial experiences, which are less statistically robust. While the pattern of coefficients for this variable supports the hypotheses, the coefficients are only marginally significant statistically. This likely is due to the highly skewed nature of the changes in peer entrepreneurial experiences; the vast majority of values of this variable are zero, as additions of entrepreneurial peers are rare.

The final concern is the possibility of sorting on unobserved individual characteristics; for example, individuals predisposed to entrepreneurship may seek out firms with former entrepreneurs, thereby generating a spurious correlation between peer characteristics and entrepreneurship. Estimates from conditional fixed effects logistic regression models are presented in Table 3. These models estimate the rate of entrepreneurship as a function of within-career variation in firm characteristics. That is, controlling for (fixed) inherent

¹⁰ There is some attenuation in the effect of peer inter-firm mobility, suggesting that part of the effect of being surrounded by mobile peers is a generic turnover effect. However, the effect of entrepreneurial peers is virtually unchanged between models 4 and 5.

entrepreneurial tendencies of different individuals, they examine whether individuals are more likely to become entrepreneurs in years when the measures of peer characteristics are highest. The estimates in Table 3 reinforce our earlier results – all three hypotheses are supported – and suggest that the estimated peer effects are not spurious consequences of sorting on fixed individual characteristics.

Co-workers with entrepreneurial experience are, by definition, no longer full-time entrepreneurs. Many of these individuals will have sought paid employment due to the failure or poor performance of their entrepreneurial ventures. In Table 4, we separate out peers who started ventures that exited within a year from those who started ventures that lasted longer. While we cannot say with certainty that those whose ventures survived longer were all successes, it is highly likely that those that lasted only a year were generally failures. Table 4 reports the results separately for these two types of peers. Models 1 and 2 report coefficients for the regressions run in Table 2, that is, without individual fixed effects. Models 3 and 4 report conditional fixed effects models, estimated in the same way as the models in Table 3. Focusing on the coefficient estimates for the change variables, we see that the addition of both failed and more successful entrepreneurs to the work environment increases the rate of entrepreneurial entry.¹¹ The fact that even the least successful entrepreneurial peers have a robust effect on the rate of entrepreneurship may strike some as surprising. However, we believe that it is consistent with our arguments about the ways in which entrepreneurial peers shape entrepreneurial motivation and opportunity. “Failed” entrepreneurs who have found

¹¹ The point estimates for changes in the proportion of failed entrepreneurial peers appear larger than the point estimates for successful entrepreneurs; however, these differences are not statistically significant.

employment may, in particular, play an important role in reducing risk aversion and any “stigma of failure” associated with entrepreneurship (Landier 2005).

DISCUSSION

Our analyses suggest that the career experiences of peers in the workplace play an important role in defining the informational and normative environment within which individuals reach the decision to become entrepreneurs. Drawing on a unique matched employer-employee panel dataset characterizing the Danish labor market, we find that employees are more likely to become entrepreneurs if their co-workers have had prior self-employment experience or have had more diverse work experience in the past.

These results are robust to controlling for fixed region-, firm- and individual-level attributes, suggesting that they are not the results of a spurious correlation due to fixed, unobserved individual-, firm-, or region-level factors.

Our results indicate that people are more likely to become entrepreneurs if they work with someone who has recently been self-employed than if they work in an environment where no one has entrepreneurial experience. This effect is substantial; a one standard deviation increase in the entrepreneurial experience measure is associated with a 6.3% increase in the focal individual’s predicted rate of entrepreneurship ($\exp(0.287 \cdot 0.212)$). This result is particularly striking, since a co-worker with entrepreneurial experience is, in most cases, likely to be someone who returned to paid employment because of a lack of success in entrepreneurship. Such individuals nonetheless induce others to attempt entrepreneurship, perhaps by communicating the positive aspects of the entrepreneurial

role, by demystifying the entrepreneurial process, or merely by demonstrating that they have successfully re-entered wage employment. Their re-employment may be particularly reassuring to risk-averse individuals who may want to start new firms but are concerned about their future prospects in the event that they fail, or to those concerned by the stigma of failure.

Furthermore, our results suggest that individuals are more likely to become entrepreneurs if their colleagues have diverse work experiences or, conversely, are less likely to launch a new venture if their co-workers are all long-tenured with the same firm. The effect of peer inter-firm mobility is larger than the impact of entrepreneurial peers: a one-standard deviation increase in peer inter-firm mobility increases the rate of entrepreneurship by 15.1% ($\exp(0.222 \times 0.635)$). The effect of peer inter-firm mobility is consistent with research arguing that the movement of individuals between firms entails the flow of knowledge and perspectives (Baty, Evan and Rothermel 1971; Sørensen 1999; Almeida and Kogut 1999). More generally, it is consistent with the notion that the identification of entrepreneurial opportunities is fostered by greater informational diversity.

Perhaps our most intriguing results concern the interactions between parental self-employment and peer characteristics. The estimated interaction effects indicate that environmental influences from one aspect of one's life can act as substitutes for the environmental influences from the workplace. Entrepreneurial peers have less of an impact on children of the self-employed, for example: in fact, the estimated effect of entrepreneurial peers for children of the self-employed is not statistically distinguishable

from zero. We interpret this as evidence that entrepreneurial parents and colleagues exert similar types of influences, for example by conveying information about the entrepreneurial process and by changing attitudes toward entrepreneurship.

Despite these advances in our understanding of the role that co-workers play in shaping the entrepreneurial decision, several issues remain for future research. First, while we have suggested two mechanisms of peer influence that are deeply rooted in the entrepreneurship literature – opportunity identification and motivation towards entrepreneurship – a deeper consideration of the nature of peer influences is warranted. With respect to opportunity identification, for example, our analyses do not allow for a fine-grained consideration of the types of information and insights that individuals may learn vicariously from their peers. Does the effect of peers derive from being able to combine information about market conditions and practices in different firms and industries, or do peers provide more specific knowledge about concrete opportunities? Similarly, future research should attempt to shed greater light on the nature of influences on entrepreneurial motivation. For example, does the presence of entrepreneurial peers cause individuals to place a greater value on entrepreneurial job characteristics, such as autonomy? Or do entrepreneurial peers primarily serve to demystify and legitimate entrepreneurship as a career choice and reduce the stigma of failure?

A further concern arises from the fact that our identification of workplace peers is crude, since we lack detailed information on work group assignments and/or interaction patterns in the firm. This limitation is the price we pay for our ability to conduct a large-scale

study, as we sacrifice depth for breadth. In our view, however, the impact of the crudeness of our measures should be conservative, since our measures will tend to identify co-workers as peers even if they have no meaningful contact with the focal individual. Furthermore, as noted earlier, one advantage of defining the workplace peer group as all people in the workplace is that this measure is less susceptible to endogeneity concerns than measures based on social ties or interaction patterns. Nevertheless, in the absence of a natural experiment, our results cannot provide conclusive proof of the presence of peer effects

A final potential concern relates to the empirical context of our study. We cannot rule out the possibility, for example, that our results are driven by specific institutional or cultural characteristics surrounding the labor market and entrepreneurship in Denmark. Most accounts characterize the Danish labor market as quite flexible and dynamic (e.g., Bingley and Westergård-Nielsen 2003), while generous social support means that few of those who enter entrepreneurship do so because they have no other alternative (Hancock and Beger 2001). Entrepreneurs face few barriers to founding new ventures, and rates of self-employment are comparable to other industrialized nations (Blanchflower 2000). While we cannot identify any features of the Danish context that may drive our results, we hope that future research in other institutional contexts can shed light on the generality of the influence of workplace peers in the entrepreneurial process.

CONCLUSION

This paper presents compelling evidence that the social environment of the workplace has a substantial impact on individual rates of entrepreneurship. Who your co-workers are, and in particular what they have done in their own careers, influences the likelihood that you will become an entrepreneur. We have argued that peers matter in two ways: motivation and opportunity. By changing individual perceptions of the value of entrepreneurship as a career choice, peers with entrepreneurial experience influence the motivation to pursue opportunities that might otherwise have been ignored. And by structuring the access of individuals to information and resources, the career experiences of peers influence the identification of entrepreneurial opportunities.

Our results have a number of implications for our understanding of entrepreneurship. First, our theory and evidence speak to calls to focus on the role of individual motivation in the entrepreneurial process. Critics of structural or sociological approaches to entrepreneurship argue that these approaches “have resulted in insufficient consideration of the role of the human motivation in the entrepreneurial process” because “variance across people in [their] motivations will influence who pursues entrepreneurial opportunities, who assembles resources, and how people undertake the entrepreneurial process” (Shane, Locke and Collins 2003: 258). Our results speak to the importance of contextual influences on entrepreneurial motivation, and suggest that a focus on entrepreneurial motivation does not require a focus on fixed, dispositional traits. That is, while individual variation in innate traits such as extraversion or risk taking ability may shape entry into entrepreneurship (Nicolaou and Shane 2007), the composition of an individual’s peer group influences the likelihood of entrepreneurial activity as well. This

suggests that scholars can fruitfully focus on the structural determinants of entrepreneurial motivation, as well as opportunities.

Second, we provide further evidence of the importance of the workplace in the entrepreneurial process (Freeman 1986; Burton, Sørensen and Beckman 2002; Dobrev and Barnett 2005; Gompers, Lerner and Scharfstein 2005; Sørensen 2007a). Where previous research has emphasized formal, structural features of the workplace such as firm size and age, our analyses show that we can better understand firm-level variation in rates of entrepreneurial spawning by attending to the social composition of the workplace as well. Moreover, they suggest that firm policies and practices related to hiring and retention may have indirect consequences for entrepreneurial activity. As noted earlier, the workplace is a particularly important source of entrepreneurial influence in modern societies, because it is the dominant arena in which individuals have limited discretion over who their interaction partners are. As a result, the workplace becomes a setting for unexpected influences, and for the serendipitous flow of information and ideas that may spark entrepreneurial activity.

Finally, our results speak in important ways to the literature on regional variation in entrepreneurship, and the role of both entrepreneurial culture and knowledge spillovers in generating clusters of economic activity (Saxenian 1996; Sorenson and Audia 2000; Fallick, Fleischman and Rebitzer 2006). While this literature has generally relied on inferences from aggregate data on labor flows and entrepreneurship, we provide the first direct evidence at the micro-level that the likelihood that an individual will become an

entrepreneur is impacted by the career histories of his or her co-workers. This in turn has a number of policy implications. The effects of peer inter-firm mobility, for example, suggest that regional variation in labor market institutions and policies that lead to higher rates of movement between firms may also indirectly promote entrepreneurial activity. Policies that encourage long worker tenures will tend to lower rates of movement between firms, and thereby indirectly reduce the supply of prospective entrepreneurs. Similarly, the effects of peer entrepreneurial experience imply that the costs of exiting entrepreneurship have indirect consequences for the rate of entrepreneurship, and help explain why regions may simultaneously display high rates of firm founding and failure (Sorenson and Audia 2000). Therefore, entrepreneurship in a region (or from a firm) may be suppressed to the extent that policies or social norms hinder the circulation of former entrepreneurs between established firms. A stigma of failure attached to entrepreneurship may thus affect not only the cost-benefit analyses of people considering entrepreneurship (Landier 2005), but also the supply of prospective entrepreneurs itself.

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Figure 1. Rate of Entrepreneurial Entry by Peer Entrepreneurial Experience

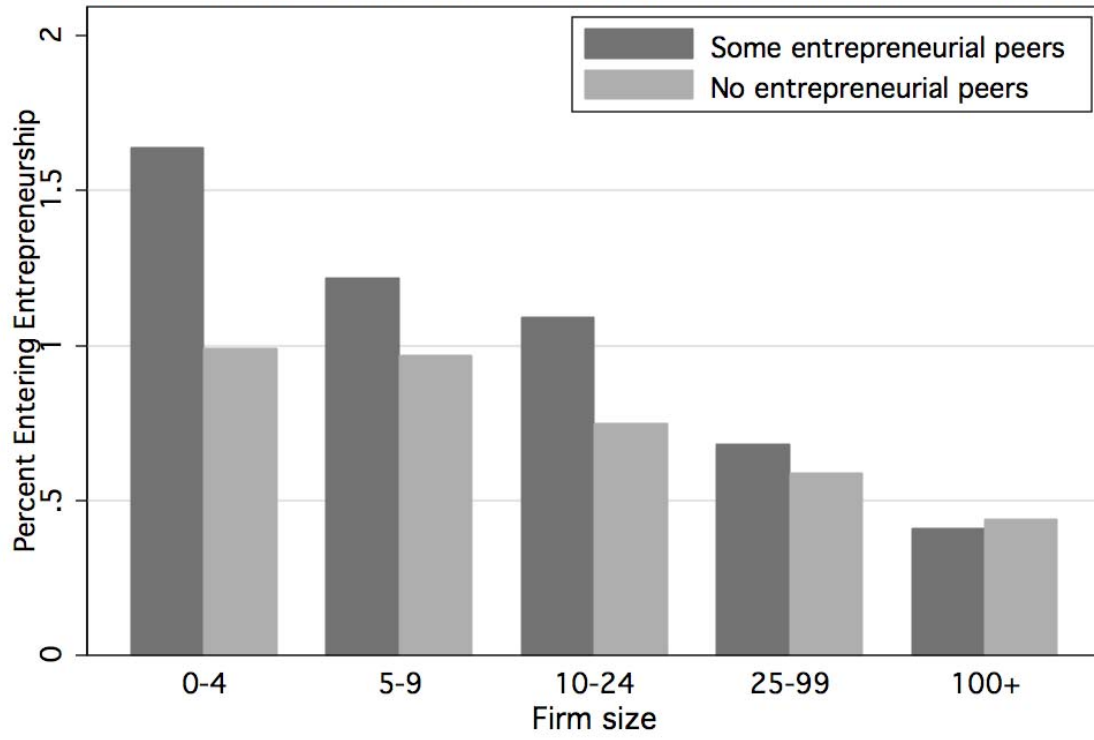


Figure 2. Rate of Entrepreneurial Entry by Level of Peer Interfirm Mobility

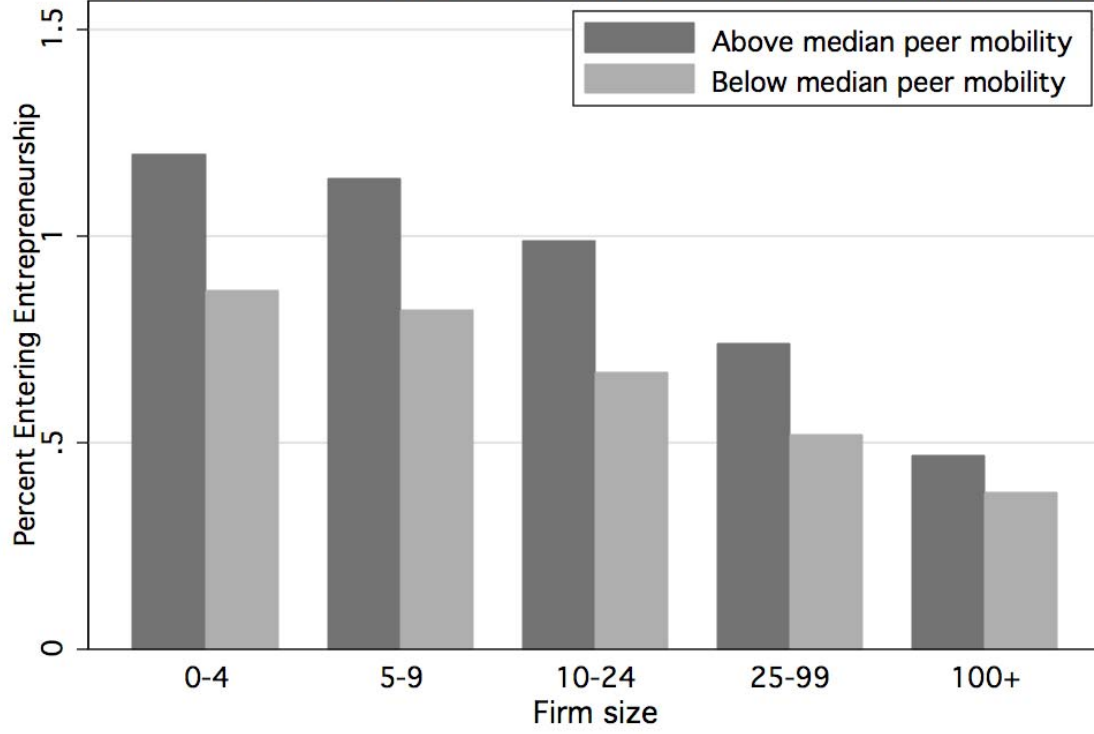


Table 1: Logistic Regression Estimates of Peer Influences on the Transition to Entrepreneurship

Variable	Hazard Rate Model				Conditional on Turnover
	(1)	(2)	(3)	(4)	(5)
Peer Inter-firm Mobility	0.219** (0.024)		0.222** (0.025)	0.222** (0.025)	0.106** (0.025)
Peer Entrepreneurial Experience		0.276** (0.046)	0.287** (0.048)	0.358** (0.054)	0.337** (0.056)
S-E Parent • Peer Entrep. Exper.				-0.222• (0.106)	-0.253• (0.110)
Own Jobhopping	0.079** (0.019)	0.086** (0.019)	0.079** (0.019)	0.079** (0.019)	-0.001 (0.019)
Tenure 0-1	0.146 (0.099)	0.188 (0.098)	0.138 (0.099)	0.137 (0.099)	-0.418** (0.101)
Tenure 1-2	0.223• (0.095)	0.251** (0.095)	0.216• (0.095)	0.216• (0.095)	-0.198• (0.098)
Tenure 2-3	0.219• (0.097)	0.239• (0.097)	0.214• (0.097)	0.213• (0.097)	-0.085 (0.100)
Tenure 3-5	0.180 (0.095)	0.192• (0.095)	0.176 (0.095)	0.175 (0.095)	-0.053 (0.098)
Labor Force Experience	0.256** (0.050)	0.257** (0.050)	0.258** (0.050)	0.258** (0.050)	0.331** (0.052)
Log Salary	-0.097** (0.026)	-0.095** (0.026)	-0.098** (0.026)	-0.098** (0.026)	0.142** (0.029)
Non-Salary Income	0.294** (0.072)	0.297** (0.074)	0.290** (0.073)	0.289** (0.074)	0.135 (0.088)
Log Debts	0.027** (0.004)	0.028** (0.004)	0.027** (0.004)	0.027** (0.004)	0.021** (0.004)
Log Assets	0.027** (0.006)	0.027** (0.006)	0.027** (0.006)	0.027** (0.006)	0.052** (0.006)
Vocational	-0.068 (0.081)	-0.066 (0.081)	-0.069 (0.081)	-0.069 (0.081)	0.036 (0.081)
Academic	-0.023 (0.061)	-0.004 (0.061)	-0.022 (0.061)	-0.022 (0.061)	-0.037 (0.061)
University	0.040 (0.134)	0.037 (0.134)	0.044 (0.134)	0.042 (0.134)	0.182 (0.135)
Female	-0.739** (0.040)	-0.736** (0.040)	-0.738** (0.040)	-0.738** (0.040)	-0.753** (0.041)
Danish	-0.417** (0.092)	-0.421** (0.092)	-0.418** (0.092)	-0.418** (0.092)	-0.378** (0.094)
Age	0.152** (0.026)	0.156** (0.026)	0.150** (0.026)	0.150** (0.026)	0.099** (0.027)
Age squared	-0.002** (0.000)	-0.002** (0.000)	-0.002** (0.000)	-0.002** (0.000)	-0.001** (0.000)

Married	0.117** (0.043)	0.115** (0.043)	0.117** (0.043)	0.117** (0.043)	0.138** (0.043)
Children 0-17	-0.030 (0.040)	-0.032 (0.040)	-0.029 (0.040)	-0.029 (0.040)	-0.002 (0.041)
Self-employed Parent	0.201** (0.032)	0.198** (0.032)	0.200** (0.032)	0.221** (0.034)	0.258** (0.034)
Num of Employer Establ.	-0.066• (0.030)	-0.074• (0.030)	-0.065• (0.030)	-0.065• (0.030)	-0.014 (0.027)
Employer Diversified	-0.042 (0.090)	-0.028 (0.090)	-0.037 (0.090)	-0.036 (0.090)	-0.060 (0.092)
Employer Age 0-2 Years	-0.006 (0.055)	0.105 (0.054)	-0.020 (0.055)	-0.020 (0.055)	-0.095 (0.056)
Employer Age 3-9 Years	0.044 (0.040)	0.101• (0.039)	0.046 (0.040)	0.047 (0.040)	-0.008 (0.040)
Establishment Size	-0.128** (0.022)	-0.125** (0.022)	-0.117** (0.022)	-0.116** (0.022)	-0.107** (0.022)

All models include fixed effects for industry, region and year.

• p < 0.05 ** p < 0.01

Table 2: Effects of Changes in Peer Characteristics

Variable	(1)	(2)	(3)
Own Job Hopping	0.084** (0.019)	0.073** (0.019)	0.073** (0.019)
Self-employed Parent	0.199** (0.032)	0.200** (0.032)	0.214** (0.033)
Peer Inter-firm Mobility at Entry	0.189** (0.025)	0.153** (0.026)	0.153** (0.026)
Change in Peer Inter-firm Mobility		0.150** (0.028)	0.150** (0.028)
Peer Entrepreneurial Experience at Entry	0.297** (0.047)	0.274** (0.050)	0.273** (0.050)
Change in Peer Entrepreneurial Experience		0.211 (0.116)	0.338* (0.133)
S-E Parent • Change in Peer Entrep. Exper.			-0.390 (0.227)

Table 3: Conditional Fixed Effects Logit Models

Variable	(1)	(2)	(3)
Married	2.472** (0.033)	2.451** (0.033)	2.451** (0.033)
Children 0-17	-0.022 (0.018)	0.013 (0.018)	0.013 (0.018)
Establishment Size at Entry	-0.215** (0.011)	-0.248** (0.011)	-0.248** (0.011)
Employer Age 0-2 Years	-0.150** (0.021)	-0.080** (0.021)	-0.079** (0.021)
Employer Age 3-9 Years	0.387** (0.020)	0.417** (0.020)	0.419** (0.020)
Number of Employer Establishments	-6.259** (0.296)	-6.211** (0.292)	-6.216** (0.293)
Employer Diversified	1.301** (0.107)	1.272** (0.108)	1.272** (0.108)
Peer Inter-firm Mobility at Entry	0.232** (0.016)	0.210** (0.016)	0.210** (0.016)
Change in Peer Inter-firm Mobility		0.634** (0.014)	0.633** (0.014)
Peer Entrepreneurial Experience at Entry	1.001** (0.052)	1.034** (0.053)	1.038** (0.053)
Change in Peer Entrepreneurial Experience		0.462** (0.100)	0.737** (0.119)
S-E Parent • Change in Peer Entrep. Exper.			-0.848** (0.209)

Table 4: Peer Influences by Quality of Peer Entrepreneurial Experience

Variable	Conditional Fixed Effects			
	(1)	(2)	(3)	(4)
Own Job Hopping	0.073** (0.019)	0.073** (0.019)		
Self-employed Parent	0.199** (0.032)	0.214** (0.034)		
Peer Inter-firm Mobility at Entry	0.149** (0.026)	0.149** (0.026)	0.209** (0.016)	0.209** (0.016)
Change in Peer Inter-firm Mobility	0.144** (0.029)	0.144** (0.029)	0.627** (0.014)	0.627** (0.014)
“Failed” Entrepreneurial Peers at Entry	0.440• (0.211)	0.440• (0.211)	1.660** (0.139)	1.651** (0.139)
Change in “Failed” Entrepreneurial Peers	1.437** (0.527)	1.482• (0.657)	1.881** (0.293)	2.337** (0.356)
S-E Parent • Change in “Failed” Entrep. Peers		-0.142 (0.935)		-1.415• (0.631)
“Successful” Entrepreneurial Peers at Entry	0.696** (0.136)	0.696** (0.136)	1.441** (0.088)	1.445** (0.088)
Change in “Successful” Entrepreneurial Peers	0.426 (0.337)	0.788• (0.385)	0.671** (0.176)	1.069** (0.213)
S-E Parent • Change in “Successful” Entrep. Peers		-1.142 (0.673)		-1.179** (0.365)