INHERITED CAUSES OF NEW FIRM PERFORMANCE: PARENT FIRM LOCATION AND THE PERFORMANCE OF SPAWNS

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INTRODUCTION

New ventures benefit from the knowledge and connections managers transmit to the new firm from their previous work experiences. Thus, it is not surprising that scholars have found that, when managers join new firms, their previous employers’ (“parent firm”) characteristics systematically influence the new venture’s performance (Agarwal, Echambadi, Franco and Sarkar, 2004). This paper builds on the literature on human and social capital transmission between parent firms and new ventures, by examining how a parent firm’s exposure to agglomeration effects, or local economies of scale (Marshall, 1920/1890; Krugman, 1991), benefits new ventures. By focusing on the transmission of agglomeration effects between parent firms and their spinoffs, the paper extends the entrepreneurship literature on agglomeration to develop a set of simple testable hypotheses that link parent firm location to new venture performance. The basic idea is that managers develop more human and social capital when they work in an industry hub (Glaeser, Kallal, Scheinkman and Shleifer, 1992) and, therefore, they have more to offer a new venture that performs a related activity. Thus, we expect that when a new venture’s senior managers previously worked in an industry hub, the venture will experience a positive performance effect even if the new venture itself is not located in an industry hub.

While scholars have made progress toward understanding how agglomeration effects at the parent firm-level influence entrepreneurial spawning rates, or the rate at which the parent firm creates new ventures (Gompers, Lerner and Scharfstein, 2005; Klepper and Sleeper, 2005), less is known about how parent firm-level agglomeration effects influence the performance of their spawns. We call such parent firm-level agglomeration effects “inherited” agglomeration effects to emphasize that human and social capital is transmitted from parent firms in industry hubs to their entrepreneurial spawns via managers who leave parent firms to manage spawns, and to distinguish this effect from traditional concurrent agglomeration effects.

We test the implications of inherited agglomeration effects in the context of the global hedge fund industry. The hedge fund industry is a good setting for a study of inherited agglomeration effects for four main reasons. First, the industry is characterized by high rates of new venture formation over the last three decades, which provides us with a wealth of new ventures to study. Second, most hedge funds are founded and managed by individuals who worked in closely related financial firms previously, which provides prima facie evidence that “inherited” knowledge and connections are important in this industry. Third, and related, as with many professional service firms, hedge funds are knowledge capital intensive businesses; yet,
there is very limited formal intellectual property protection in the industry. Thus, it seems straightforward to hypothesize that hedge fund managers’ human capital is transferable and could meaningfully affect the performance of their firms. Finally, hedge fund performance can be measured with a relatively high degree of accuracy, even for very young firms, which provides us with a more precise measure of spawn performance than firm survival (Agarwal et al., 2004) and pre-money valuation (Chatterji, 2009).

By developing and testing the concept of inherited agglomeration effects, the paper contributes to the literature on agglomeration effects in entrepreneurial ventures. Although we cannot completely control for all sources of unobservable heterogeneity in our empirical tests—and perhaps most significantly, for all potential screening at the parent stage— we use micro-data, along with a wide range of controls, and propensity score matching to deliver stylized facts about the relationship between parent firm location and new venture performance, which suggest that inherited agglomeration effects may be an important source of competitive advantage for new ventures. In this regard, as inherited agglomeration effects are transmitted through entrepreneurs, our findings also support the idea that individual level factors, such as the location of the manager’s previous employment, affect the capabilities and performance of young firms.

CONCEPTUAL DEVELOPMENT

Helfat and Lieberman (2002) suggest that the performance of new firms is shaped by entrepreneurs’ prior affiliations and knowledge gained through previous employment. A number of papers have found evidence consistent with this idea: Phillips (2002) finds evidence that social capital is transferred between parent and spawns among law firms. Agarwal, Echambadi, Franco and Sarkar (2004) demonstrate that technical knowledge influences spawning rates and spawn survival rates in the disk drive industry. Building on the idea that managers transfer knowledge between parent firms and spawns, Chatterji (2009) shows how non-technical knowledge influences spawn performance in the medical device industry. This paper builds on the idea that parent firm characteristics are transferable to new firms and extends this literature by examining how agglomeration effects at the parent firm level influence the performance of spawns.

Of course, the idea that new ventures can benefit from agglomeration effects is well established. Braun and MacDonald’s (1982) pioneering work on the rise of the semiconductor industry in Silicon Valley pointed to an important correlation between new firm formation and agglomeration effects due to knowledge spillovers and social networks. Jaffe, Trajtenberg, and Henderson (1993) provided large sample empirical support for the idea that agglomeration effects influence knowledge spillovers, finding that patent citations tended to cluster locally. In an in-depth comparative study of Silicon Valley firms and firms along Route 128 in Massachusetts, Saxenian (1994a) suggested that start-ups flourish in agglomerated environments because they are more centrally embedded in the industry’s customers, supplier and support networks. In related work, Saxenian (1994b) emphasized the role that close connections between spawns play in facilitating the spillover of innovation producing knowledge. Stuart and Sorenson’s (2003) study of biotechnology start-ups find large sample quantitative support for Saxenian’s (1994a, 1994b) hypothesis that social networks underlie agglomeration effects. This paper builds on the prior work on agglomeration effects in entrepreneurial firms by considering how agglomeration influences the development and flow of human and social capital in new firms. We extend the stream of research on agglomeration effects in start-ups by focusing on the inter-generational transmission of agglomeration effects between parent firms and spawns.
While much of the literature on agglomeration effects in entrepreneurial firms has focused on concurrent agglomeration effects, or benefits that accrue to start-ups when they locate in an industry hub, two papers have explored inherited agglomeration effects. Klepper and Sleeper (2005) show that agglomeration effects moderate knowledge transference between parent firms and their spawns in the laser industry, suggesting that agglomeration effects can be transmitted between firms. Further, Gompers et al., (2005) study founders of venture capital-backed firms, showing that individuals who work for entrepreneurial firms located in industry hubs are exposed to suppliers, customers, and venture capitalists, gaining entrepreneurial skills during their employment, thereby equipping them for founding of their own firm. While the extant work suggests that agglomeration effects are inheritable, neither paper examines how inherited agglomeration effects influence spawn performance. Yet, if initial founding conditions imprint organizations (e.g. Stinchcombe, 1965; Johnson, 2007), inherited agglomeration effects should have a lasting impact on new firms. Thus, it seems natural to extend the literature by asking how inherited agglomeration effects influence new firm performance.

The extant literature makes two well supported predictions that form the building blocks for our first hypothesis: agglomeration effects increase the value of an individual’s human and social capital when they work in an industry hub, and new ventures inherit human and social capital from their managers. Therefore, we expect that ceteris paribus new ventures led by managers from an industry hub will outperform ventures led by managers from outside the industry hubs. Thus, our inherited agglomeration effects hypothesis can be summarized as:

**Hypothesis 1:** New ventures will perform better when their principal managers were previously employed by parent firms located in the relevant industry’s geographical hub.

Hypothesis 1 builds on the central ideas in the agglomeration and entrepreneurial spawning literatures. When managers work in industry hubs, they are exposed to valuable knowledge, information, and ideas as well as people that managers on the periphery of the industry are less likely to encounter. The unique access to such critical drivers of human and social capital that geographic proximity provides not only makes a manager more likely to form or join a new venture, it also gives them a competitive edge over their peers who work outside of industry hubs when they decide to found and lead new ventures.

Inherited agglomeration effects differ from traditional agglomeration effects in the sense that inherited effects are those received by new ventures from managers who join new firms from existing firms, regardless of the new ventures location, while traditional agglomeration effects are obtained by the new venture concurrently. The novelty of this paper rests on developing and testing the idea of inherited agglomeration effects on new firm performance, but we also test for traditional agglomeration effects, which predict that new venture performance will be positively influenced by the new venture’s location in an industry hub.

**Hypothesis 2:** New ventures will perform better if they are located in the industry’s geographical hub.

Inherited agglomeration effects and traditional agglomeration effects have much in common intellectually, but they do imply different predictions. In particular, inherited agglomeration effects imply that new ventures will flourish when their senior managers worked in an industry hub previously, regardless of the new ventures geographic location, while
traditional agglomeration effects predict that new ventures will flourish when the new venture is located in the industry’s geographic hub, regardless of where their managers worked previously.

While in principle inherited agglomeration effects could obtain via a manager who worked in any job in an industry’s geographical hub prior to joining a new venture, the mechanisms underlying the theory of inherited agglomeration effects suggest that some forms of prior employment will be far more valuable than others. In particular, one should expect that a new venture will benefit more when a manager’s previous job was more closely related to the new venture’s operations because manager’s working in closely related functions will bring more relevant knowledge and social capital to the new venture. Therefore, our third hypothesis is:

\[ \text{Hypothesis 3: Inherited agglomeration effects will be greater when a manager’s pre-founding experience is more closely related to a new venture’s operations.} \]

**DATA AND EMPIRICAL DESIGN**

**Sample construction and variables**

Data on hedge fund performance, location, size and inception date were obtained by combining the two most extensive and widely used hedge fund databases: Lipper-TASS (“TASS”) and Hedge Fund Research (“HFR”). The data sets include data on over 12,000 individual funds from 3,113 hedge fund firms during the period 1978 to 2006. We hand-collected detailed biographical information about the top two hedge funds managers in 684 hedge fund firms from Barclays’s 2004 (second quarter) MARhedge database, including manager name, educational history and previous two employers. We then merged the MARhedge data with the TASS and HFR datasets, which resulted in 1,585 unique hedge fund manager-previous employer pairs of which 1,058 pairs had full hedge fund performance and previous employer location information. In order to conduct the empirical tests with meaningful controls on previous employer characteristics, we restricted the test sample to include only job spells with previous employers listed on public stock exchanges in the United States and United Kingdom between 1978-2007. The resulting data set consists of 658 hedge jobs spells, our unit of observation. The propensity score matched dataset consisted of 466 observations.

**Dependent variables.** We use two different dependent variables to measure hedge fund performance: 8-factor average abnormal returns (“\( \text{ALPHA} \)”) and the 8-factor Information Ratio (“\( \text{IR} \)”). Abnormal returns are estimated using the standard approach as the difference between fund \( i \)’s actual return fund at time \( t \) and the fund’s expected return. The expected return is computed by taking into account eight hedge fund specific factors: seven factors from Fung and Hsieh (2004) and a liquidity risk factor from Pástor and Stambaugh (2002). Results are robust to using raw returns and to estimating \( \text{ALPHAS} \) and the \( \text{IR} \) based on the standard 4-factor model.

**Explanatory variables.** Our key independent variable to test Hypothesis 1 measures the location of the previous employer of the hedge fund firm’s principal managers. Specifically, we capture whether the headquarters location of the previous employer (parent firm) of a hedge fund’s principal manager was in one of the geographical hubs of the financial service industry—New York or London. We measure parent firm location as a binary variable, \( \text{PARENT\_CENTER} \), which equals one if the location of the previous employer is New York City or London, and zero otherwise. Although there is undoubtedly some measurement error in our explanatory variable \( \text{PARENT\_CENTER} \), this measurement error biases our results toward zero (Aigner, 1973). The
key independent variable to test Hypothesis 2 captures the location of the hedge fund; 
\textit{HF\_CENTER} is a binary variable set equal to one if the hedge fund is based in New York or London, and zero otherwise. In order to test Hypotheses 3 we characterize hedge fund managers’ prior work experiences as being closely related to hedge fund operations or otherwise. Our interviews with industry experts suggest that investment management jobs, investing in financial securities or active management of investments, are the type of jobs most closely related to hedge fund management, and thus we coded whether the manager’s previous job was in investment management. We then interacted the investment manager dummy variable with \textit{PARENT\_CENTER} in order to create a variable that measures the marginal effect of closely related experience, conditional on inherited agglomeration effects, on hedge fund performance.

\textit{Control variables.} We include three types of control variables in our analyses: manager controls, job spell controls, and hedge fund controls. We use educational background measures to control for managers’ ability before their employment spells with parent firms, consistent with prior literature (Chevalier and Ellison, 1997). We control for parent firm quality using two direct measures of parent firm performance, whether the parent firm was ranked as a top 25 securities trading firm in any year 2000-2007 by Institutional Investor Magazine (\textit{RANKED}), and the parent firm’s long-run average Tobin’s Q. We also include a control for the effects of industry relatedness between a parent firm and their spawns’ performance (\textit{SIC6}). Further, we include a set of dummy variables for firms that are most likely to create value for their employees that may not be correlated with public measures of firm quality. Specifically, we include a firm fixed effect for each of the “bulge bracket” investment banks: Citi, Credit Suisse, Goldman Sachs, JP Morgan, Lehman Brothers, Merrill Lynch, and Morgan Stanley (Fang, 2005). We also include hedge fund controls in our specifications, including controls for scope, size, age and location.

\textbf{Empirical specification and Propensity Score Matching}

The baseline tests of our first hypothesis are OLS regressions of hedge fund performance measures (\textit{ALPHA} or \textit{IR}) on managers’ job spell location measures \textit{PARENT\_CENTER} and \textit{HF\_CENTER} for hedge fund firm \textit{i} and job spell (or parent firm) \textit{j} controlling for a vector of controls described above. In our test of Hypothesis 3, we also include in equation (2) two interaction terms: \textit{PARENT\_CENTER} x previous job in investment management and \textit{HF\_CENTER} x previous job in investment management. To deal with selection effects that are correlated with all the observable information about firms and workers, we use a propensity score matching. In the absence of unobserved heterogeneity, propensity score matching controls for selection bias by creating a matched sample of treatment and control observations that are similar with respect to all observable characteristics (Rosenbaum and Rubin, 1983). We corroborated the impact and effectiveness of the matching: while pre-matching the F-test for the joint difference in means of all the control variables between the two groups before matching is statistically significant at the 1% level, it is not statistically significant after matching. Further, the propensity score distributions for treatment and control group post-matching are comparable.

\textbf{RESULTS AND DISCUSSION}

Table 1 shows the matched sample performance results. The \textit{PARENT\_CENTER} coefficient in the 8-factor alpha regression is 26 basis points per month, and 14 basis points per month in the information ratio regression. Both estimates are significant at the 1% level.
coefficient on HF_CENTER is negative, but not significant in the 8-factor alpha regression, and 6 basis points per month and significant at 5% in the information ratio regression. The results lend support to our key contention that inherited agglomeration effects are important, at least in the hedge fund context. Indeed, the results suggest that inherited effects are at least of the same magnitude as traditional agglomeration effects, even after controlling for systematic and idiosyncratic risk exposure and parent-firm fixed effects for bulge bracket firms. The marginal effect of investment management experience on performance (the information ratio) is 11 basis points and significant at the 5% level, conditional on inherited agglomeration effects. Thus inherited agglomeration effects are moderated by the relatedness of the manager’s previous job with incumbent to the spawn’s activity. We therefore find support for Hypotheses 1, 2 and 3.

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Insert Table 1 Here
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DISCUSSION AND CONCLUSION

This paper develops the logic for inherited agglomeration effects: economic benefits that accrue to managers while working at a parent firm in an industry hub that can be subsequently transferred to an entrepreneurial spawn when managers leave incumbent firms to manage a spawn. We test the performance predictions of the theory in the context of the global hedge fund industry. The results show that hedge funds whose principal managers were previously employed by parent firms located in financial services industry hubs outperform other hedge funds by about 3.12% per year. Interestingly, the impact on performance from inherited agglomeration effects is at least as large as the effect of traditional agglomeration effects. The core result is driven by hedge fund managers who previously worked in closely related investment management positions in New York and London. Our results suggest that meaningful variation in the performance of a new venture can be traced to agglomeration-related human and social capital that senior managers transfer to a new firm from their parent firms. By explicating one important link between parent firm characteristics and new venture performance, we offers some insight into the mechanisms behind the sources of competitive advantage in young firms.

REFERENCES AVAILABLE FROM THE AUTHORS

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<td>Matched Sample Results</td>
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<td>PARENT_CENTER</td>
<td>0.26 ***</td>
<td>0.14 ***</td>
<td>0.09</td>
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<td>(0.09)</td>
<td>(0.05)</td>
<td>(0.06)</td>
<td></td>
</tr>
<tr>
<td>HF_CENTER</td>
<td>-0.05</td>
<td>0.06 **</td>
<td>0.06 *</td>
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<tr>
<td>(0.08)</td>
<td>(0.03)</td>
<td>(0.04)</td>
<td></td>
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<tr>
<td>PARENT_CENTER x Previous Job in Investment Management</td>
<td>0.11 **</td>
<td></td>
<td></td>
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<td>(0.06)</td>
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* sign. at 10%; ** sign. at 5%; *** sign. at 1%; SEs (in parentheses) are clustered at parent level