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Hierarchies and entrepreneurship

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ABSTRACT

We establish a correlation between the hierarchical structure of a firm and the likelihood of business creation among its former employees, using a sample of 16 million observations of Swedish workers and a novel proxy for hierarchies based on occupation data. Conditional on firm size and many other variables, employees in firms with more layers are less likely to enter entrepreneurship, to become self-employed, and to switch to another employer. The effects of layers are much stronger for business creation than for job-switching and they are stronger for entrepreneurship than for self-employment. We discuss two potential explanations for the distinctive hierarchy effect we find. Part of the effect could be to be due to preference sorting by employees, and part due to employees in firms with fewer layers having a broader range of skills. One test showing that the probability of entrepreneurship increases with their prior rank in an organization is consistent with ability sorting and inconsistent with preference sorting.

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1. Introduction

Compared with their counterparts in large firms, workers in small firms are more likely to separate from their employers (Anderson and Mayer, 1994; Lazear and Shaw, 2008) and those that leave small firms are more likely to become entrepreneurs or self-employed than those leaving large firms (Wagner, 2004; Dobrev and Barnett, 2005; Gompers, Lerner and Scharfstein, 2005; Elfenbein, Hamilton and Zenger, 2010; Chen, 2012). One candidate explanation for this "small firm effect" is the segregation of worker types into large and small firms. Indeed, Elfenbein et al. (2010) use self-reported data on whether individuals have a desire to become entrepreneurs to show that individuals with this desire are overrepresented in small firms, and are more likely to subsequently establish a business.

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Small firms attract individuals with preferences and abilities for entrepreneurship not just because they are smaller, but because they are different. In particular, large firms are generally more hierarchical and bureaucratic, characteristics that may induce them to assign less value to skills appropriate for entrepreneurship and that repel workers with a preference for autonomy and work variety. Unfortunately, research on the effect of organizational bureaucracy on transitions to entrepreneurship has been limited to date by its reliance on potentially crude proxies, notably firm size and age (e.g., Dobrev and Barnett, 2005; Sørensen, 2007; Kacperczyk, 2012).[4] But the fact that firm size is inversely related to entrepreneurship might be due to a host of reasons. For example, small and young firms are much more likely to go out of business than their counterparts (Haltiwanger, Jarmin and Miranda, 2013), thus mechanically creating a negative correlation between both firm size and firm age with entrepreneurship.

In this paper, while controlling for firm size and age effects, our objective is to use two well-established measures of the hierarchical structure of the firm in order to examine their correlation with entrepreneurship. First, we use the number of levels of decision-making in the hierarchy. Second, we measure the span of control. These two measures represent two out of three basic structural mechanisms used to help coordinate divided tasks (Griffin and Moorehead, 2014, p. 438) and which appear with greater size and age of firms.[5] Entrepreneurship is a rare event, and analysing its correlation with the hierarchical structure of the firm requires an extensive dataset on the hierarchical structure of firms. Typically, such datasets have not been available which has restricted analysis of the hierarchical structure of firms to small sample sizes. In contrast, our sample is drawn from the Swedish matched employer-employee dataset, and consists of over 240,000 firm-level observations and 16 million individual-level observations over the period 2001–2008. Following the pioneering work of Caliendo and Rossi-Hansberg (2012) and Caliendo, Monte and Rossi-Hansberg (2015), we use employees' job titles to classify them into one of up to four ranks in their organization (CEOs, senior staff, supervisors, and production workers). We then measure the hierarchal structure of the firm by counting the number of distinct ranks that are represented in the firm, which we refer to as the number of layers. We also count the number of employees at each rank and compute the span of control as the ratio of the number of employees at a lower rank to the number at the next higher rank, and average this measure across all adjacent ranks in the organization. Our data allow us to create these two measures for all firms with at least two employees in an economy.[6] Our sample behaves as one would expect from a meaningful measure of a pyramidal hierarchy: higher ranks contain fewer employees and pay higher wages than lower ranks, and employee transitions are most likely to be to an adjacent rank.

Section 2 describes our data. In Section 3, we demonstrate that the number of layers in the firm has a large effect on the likelihood of entrepreneurship. Conditional on firm size and age, employees in firms with more layers are less mobile. This is true regardless of the mover's destination, but the effect of layers on business creation is greater than its effect on relocation to other incumbent firms. We decompose business creation into self-employment and entrepreneurship, defined by the legal form of business that is created. More layers in a firm suppress both types of business creation, but the effect is especially pronounced for entrepreneurship.

In Section 4, we discuss two prominent arguments – sorting by preference and sorting by ability – for why bureaucracy should be correlated with entrepreneurship. We first look at evidence for the preference sorting hypothesis. Individuals with a strong preference for entrepreneurship should be more willing to establish businesses that yield low financial returns, and they should also persist in business for longer. We test these implications, and conclude that employees of less hierarchical firms do behave in ways consistent with preference sorting. We then assess whether there are differences in entrepreneurial ability among employees of firms with different numbers of layers. We frame this analysis around Garicano (2000) and Caliendo and Rossi-Hansberg (2012) knowledge-based hierarchy models, which relates the number of layers in a firm to the breadth of problems that employees at different ranks are expected to be able to solve. Although they do not study their model's implications for employee separations, we derive and test two implications. First, employees in firms of a given size but with fewer layers should have a higher propensity to enter entrepreneurship and self-employment and to be more successful when they do. Our evidence on business creation rates is consistent with the knowledge-based hierarchies model (but also with preference sorting); our evidence on earnings do not support the model. Second, the propensity for business creation is greater when employees of a given rank have more layers beneath them. We find strong support for this prediction.

2. The data

The data are drawn from the Statistics Sweden's LISA database drawing on several official registry databases of every person living in Sweden. We obtain information for employed workers on occupation codes, firm-worker links, worker's

[4] Defending the choice of using firm size and age as representative measure of bureaucracy, Sørensen (2007) writes: "An organization's degree of bureaucratization is not directly observable. Moreover, constructing and collecting specialized measures of hierarchy, role specialization, and routinization in the large samples needed to capture transitions to entrepreneurship is prohibitively difficult." (p. 395)

[5] The third mechanism is departmentalization – the manner in which divided tasks are combined and allocated to work groups (Griffin and Moorehead, 2014, p. 438). Our data do not allow us to capture this mechanism with any precision.

[6] It should be noted that with a given number of employees, a relatively tall structure (many hierarchical levels) must necessarily have a narrower average span of control, and so we will examine whether there is any added value of including both measures compared with using just one.