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Job creation and job types – New evidence from Danish entrepreneurs

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ABSTRACT

We extend earlier analyses of the job creation of start-ups versus established firms by considering the educational content of the jobs created and destroyed. We define education-specific measures of job creation and job destruction at the firm level, and we use these measures to construct a measure of "surplus job creation", defined as jobs created on top of any simultaneous destruction of similar jobs in incumbent firms in the same region and industry. Using Danish employer-employee data from 2002–2007 that identify the start-ups and that cover almost the entire private sector, these measures allow us to provide a more nuanced assessment of the role of entrepreneurial firms in the job-creation process than in previous studies. Our findings show that although start-ups are responsible for the entire overall net job creation, incumbents account for more than one-third of net job creation within high-skilled jobs. Moreover, start-ups "only" create approximately half of the surplus jobs and even less of the high-skilled surplus jobs. Finally, our approach allows us to characterise and identify differences across industries, educational groups and regions.

1. Introduction

The purpose of this paper is to develop a framework for comparing the job creation and job destruction by start-ups and established firms – a framework that distinguishes between different firm types and between different job types and that takes into account the potential simultaneity in the creation and destruction of jobs across firms.

Entrepreneurs are generally considered to be of key importance for generating new jobs and economic growth in an increasingly competitive international environment. This has given rise to initiatives such as the *Small Business Act for Europe* and the *Small Business Innovation Research* (or *SBIR*) programme in the USA, programmes that reallocate substantial resources from large established firms to small firms and start-ups.

The empirical testing of these issues on actual job data started back in the 1980s, when Birch (1981, 1987) claimed that small firms (many of which are young as well) are the main driver of US job creation. Birch (1987) found that firms with less

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than 20 employees accounted for 88% of overall employment growth in the USA between 1981 and 1985. In the wake of Birch's initial analyses, a large number of studies have analysed the role of small and new firms in the job-creation process using data on firm- or establishment-level worker flows. Most of these studies rely on the methodology developed in Davis and Haltiwanger (1992) and Davis et al. (1996a), who define measures of job creation and job destruction at the establishment level, which in turn can be used to construct measures of gross and net job creation (and destruction) at more aggregate levels, such as a firm, an industry or a size/age class of firms.

The majority of studies in the literature have focused on the job creation of small firms (or establishments) versus large firms (or establishments); see, *e.g.*, Baldwin and Picot (1995), Wagner (1995), Davis et al. (1996a, 1996b), Broersma and Gautier (1997), Hohti (2000), Barnes and Haskel (2002), and Neumark et al. (2011). The general message that emerges from this literature is that small firms (or establishments) tend to contribute more to both gross and net job creation than larger firms (or establishments).

Although start-ups are typically small and small firms are often new, the two sets of firms are not identical. However, the number of studies that have examined the role of new establishments or new firms in the job-creation process is more limited. Examples include Dunne et al. (1989), Davis et al. (1996a), Klette and Mathiassen (1996), Spletzer (2000), Neumark et al. (2006), Malchow-Møller et al. (2011) and Haltiwanger et al. (2013). Among these, only Neumark et al. (2006), Malchow-Møller et al. (2011) and Haltiwanger et al. (2013) distinguish new establishments belonging to new firms from new establishments belonging to old firms. Nonetheless, the message that emerges from this literature is that new establishments or new firms contribute significantly more to gross and net job creation than older establishments/firms. In the most recent paper, Haltiwanger et al. (2013) actually find that, once firm age is controlled for, there is no connection between firm size and net job creation. New firms can account for the entire net job creation in the economy.

However, most of the above-mentioned studies do not distinguish between different types of jobs, and those that do so disaggregate by employer characteristics such as industry; see, *e.g.*, Davis and Haltiwanger (1992) and Spletzer (2000). None of these studies distinguishes between different types of jobs created (and destroyed) within a firm, most likely due to a lack of data.[3] This necessarily limits what can be learned regarding the flows of different types of jobs. Thus, a positive job creation figure for a given firm may hide substantial reallocations between different types of jobs within the firm. It could, *e.g.*, reflect that less educated blue-collar workers have been laid off whereas highly educated white-collar workers have been hired. Without data on the types of jobs involved, the different overall job creation patterns of entrepreneurial firms and non-entrepreneurial firms documented in the literature may mask important underlying differences in the types of jobs created and destroyed. This situation is unfortunate if we are interested in not only the number but also the type and quality of jobs created by entrepreneurial and non-entrepreneurial firms.

Furthermore, job creation in one firm is likely to come, to some extent, at the expense of job destruction in other firms. Specifically, if the creation of jobs in one firm occurs within the same narrowly defined market, industry and/or area in which similar jobs are lost in other firms, then the "newness" of the jobs is likely to be lower than if jobs are created in industries, markets or areas where similar jobs are not lost. In the former case, the jobs created may reflect simple displacements or reallocations of existing jobs, whereas the jobs created in the latter case are new to the local job market. This distinction between jobs that potentially reflect displacement/reallocation of existing jobs and jobs that are new to the local job market is not captured by the existing gross and net job creation measures but might certainly be relevant for policy interventions aimed at job creation.[4]

In this paper, we address these two issues. We focus on job creation in start-ups versus established firms, but as opposed to previous studies, we introduce a measure of education-specific job creation at the firm level. We base our analysis on Danish employer-employee register data for the 2002–2007 period. These data cover almost the entire private sector of the Danish economy, and they identify all organic start-ups (nascent firms) in a given year and thereby avoid misclassifications of organisational spin-offs of established firms as start-ups. Furthermore, the data contain detailed information on the educational backgrounds of all employees, which can be used to characterise the educational content of a job.

Applying these data sources allows us to distinguish between different types of jobs in our analysis of job creation. The disaggregation of jobs into types also enables us to link the creation of specific types of jobs in some firms directly to the destruction of the same types of jobs in other firms. Hence, we are able to construct a measure of "surplus job creation", defined as jobs created on top of any simultaneous destruction of similar jobs in established firms in the same region and industry. This definition in turn allows for a more nuanced assessment of the contribution of both entrepreneurial firms and established firms to job creation than if one only relies on the traditional measures of gross and net job creation. Gross job creation ignores any simultaneity between job creation and destruction across firms, whereas net job creation nets out everything and thereby ignores any differences across firms. Our measure of "surplus job creation" is an attempt to capture

[3] The only paper that we have been able to find that distinguishes between different types of jobs at the firm level is an early paper by Dunne et al. (1997), who study the connections between changes in technology and the structure of wages and employment. In this paper, measures of job creation and job destruction for production and non-production workers, respectively, are constructed.

[4] Although the issues of potential displacement/reallocation of jobs have not been the focus of the above-mentioned studies, they have been discussed in related strands of the literature. Notably, analyses of employment growth at regional levels (*e.g.*, Audretsch and Fritsch, 2002; Fölster, 2000; Fritsch and Müeller, 2008) and analyses from the industrial-organisational realm (*e.g.*, Audretsch, 1995) are highly aware that the job creation of start-ups potentially displaces jobs in established firms.