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The significance of firm and occupation specific human capital for hiring and promotions ☆

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HIGHLIGHTS

- We analyze firms' hiring and promotion patterns using the Swedish data.
- Firms are less likely to hire from outside the firm for higher job ranks.
- Firms are less likely to hire/promote outside the occupation for higher job ranks.
- Both firm- and occupation-specific human capital are equally valuable.
- The value of firm- and occupation-specific human capital varies across occupations.

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ABSTRACT

This paper analyzes firms' hiring and promotion patterns, and infers the relative significance of the firm- and occupation-specific human capital required for each job rank. The results suggest that firm-specific skills are just as valuable as occupation-specific skills, and that the value of these specific skills increases in job rank. However, there is great heterogeneity across occupations. This paper also shows that the lengths of firm- and occupation-tenure are noisy measures of firm- and occupation-specific human capital, and contrasts our results with those of other recent studies on the returns to firm- and occupation-tenure for wages.

1. Introduction

In order to fill a vacancy for top manager of a marketing department in a firm, would the firm promote someone who knows more about the specifics of the firm? Or would it hire someone who is good at marketing in general? The answer to these questions can provide direct implications for the relative importance of firm vs. occupation specific human capital required for a job, and consequently for a firms' personnel strategies and workers' promotion paths. For example, if firm-specific human capital is relatively more important, especially for high ranked jobs, firms would focus on training and internal promotions (as opposed to external search and recruiting), which in turn would allow long-term contracts with workers.

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Despite the importance of job hierarchies and promotions for organizational design and for workers' career paths,[2] there exist few studies that analyze how the importance of firm vs. occupation-specific human capital for hiring and promotions changes with *job rank*. Instead, the previous literature on firm- and occupation-specific human capital has largely focused on estimating the returns to firm and occupation tenure for individual workers' *wages* without controlling for job rank (see, e.g., Altonji and Shakotko, 1987; Topel, 1991; Parent, 2000; Kambourov and Manovskii, 2009b). Also the previous literature on job hierarchies and promotions has focused on the firm-specific aspects such as firm-specific human capital, firm–worker specific contracts, or firm–worker specific matching, and has largely ignored the occupation-specific aspects.[3]

Therefore, in this paper we analyze the significance of firm- and occupation-specific human capital for each job rank within the job hierarchies of firms. Using the Swedish employer–employee matched data, which include detailed job ranks and occupation codes comparable across firms, this paper shows that for a given job rank, the tendency to promote within the same firm is similar to the tendency to hire/promote within the same occupation, on average. Moreover, both tendencies increase in job rank. These results suggest that as one moves up the job ladders within a firm, both firm- and occupation-specific human capital become equally more valuable for firms' hiring and workers' promotions.

This paper also shows that the relative importance of firm- and occupation-specific human capital varies significantly across occupations. In sales, for instance, firm specific human capital is relatively more important for hiring and promotion at all ranks, whereas in medicine, occupation-specific human capital is much more important. Therefore, the results for one occupation do not generalize to other occupations.

In modern labor economic theories, firm-specific human capital is one of the key building blocks (e.g. Becker, 1962), but occupation-specific human capital has been largely ignored until recently.[4] In stark contrast to earlier studies, though, newer studies have emphasized occupation- (or industry-) specific human capital, even suggesting that firm-specific human capital may not be significant at all, because the returns to firm tenure are not significant for workers' wages after controlling for occupation (or industry) tenure (see e.g. Neal, 1995; Parent, 2000; Kambourov and Manovskii, 2009b; Zangelidis, 2008).

We can replicate these newer wage and tenure studies with the Swedish data (see Appendix C). In contrast to the previous studies on wages, however, when we look at the promotion and hiring patterns with job ranks, we find that both firm- and occupation-specific human capital are equally important for hiring and promotions, especially for higher ranked jobs.

These findings imply that future research on firms' personnel policy and workers' careers must address both firm- and occupation-specific human capital, not ignoring either type, and must consider the types of occupations that are concentrated in a given firm. Lazear (2009) provides an important starting point in this direction of research, defining firm-specific human capital as a firm-specific combination of various occupation-specific skills.

Our approach builds upon the literature of *internal labor markets* (ILMs). An ILM is typically structured as a hierarchy of job ranks, where a single wage is attached to each rank; workers are hired only through the bottom ranks (called ports of entry); and top-ranked jobs are filled only by internal promotions (see, e.g., Doeringer and Piore, 1985). Therefore, job ranks and promotions are key building blocks for an ILM.

A main difference between our analysis and most of the ILM literature in economics is that we analyze promoting from within versus hiring from outside an *occupation* as well as from within or outside *a firm*. Surprisingly, most empirical research on ILMs has ignored the former, focusing on the firm aspect only (see, e.g. Baker et al., 1994a,b). We suspect that one major reason is the lack of data on workers' occupations and job ranks (especially for those who switch employers), and that another is the current abundance of firm-based theories (e.g. contract theory, firm-specific human capital theory, and firm-specific matching/search theory).[5]

Given the aforementioned wage studies that suggest the significance of occupation-specific human capital but the insignificance of firm-specific human capital, the lack of consideration of occupations in the ILM literature leaves a serious gap. This paper fills that gap by showing that for promotion to higher ranked jobs, both firm- and occupation-specific human capital are (equally) important.

2. Data

Our analysis is based on the Swedish employer–employee matched data on all white-collar workers in the entire private sector of Sweden (except for financial sectors) during the period 1970–1990. For each worker, the data contain annual information on wage, age, education, gender, geographic region, work–time status, firm ID, plant ID, industry ID, and occupation and rank IDs (called BNT codes). Because each ID is unique, we can track each individual worker within and across firms throughout his/her career during 1970–1990.

To reduce the computational burden, in this study, we focus mostly on full-time, male, white-collar workers between 1986 and 1989. This sample contains 337,908 workers and 1,013,757 worker–year observations.[6]

A unique feature of this Swedish data is the occupation–rank code (or BNT code), consisting of four digits where the first three (called the occupation code) describe types of tasks and the fourth (called the rank code) describes the degrees of skill the tasks require.[7] We define occupations by the three-digit level BNT code. There exist 51 different occupations such as construction, personnel work, and marketing. Within each occupation, the rank code runs from 1 (lowest) to 7 (highest).[8] Rank reflects skills needed to make decisions at that level and the number of employees.[9] See appendices A and B for more details.

These data are ideal for our analysis in several ways. First, occupation and rank codes are precise, detailed, unbiased, and carefully checked: because these data served as the input to the centralized wage negotiations, they were gathered and monitored by both the Swedish Federation of Employers and the labor unions. In contrast, most previous studies have used occupation classifications based on noisy self-reported survey responses.

Second, though job titles and their skill requirements are typically not comparable across firms, BNT codes were created precisely to facilitate such cross-firm comparison, allowing the analysis of promotions and hiring in a given rank across firms. It is also worth emphasizing that Swedish firms had full discretion in promotions and hiring, while wages were constrained, but not dictated, by the centralized wage bargaining system.

[2] For example, see Valsecchi (2000) and Gibbs and Ierulli (2002).

[3] See Gibbons and Waldman (1999) for a nice survey.

[4] For early exceptions, see Shaw (1984, 1987). For example, Shaw (1987) analyzes workers' mobility across both firms and occupations, but, like the aforementioned wage analyses, still focuses mostly on the effect of workers' firm- and occupation-tenure, not on job ranks.

[5] For example, see Baker and Holmström (1995) which is titled "Internal Labor Markets: Too Many Theories, Too Few Facts".

[6] We have also repeated the analyses for different time periods and for full-time female workers as well, but the qualitative results do not change.

[7] Rank also reflects the number of employees beneath an employee at that level and types of skills needed to make decisions at that level.

[8] To make cross-occupation comparison feasible, not all occupations span the entire 7 ranks; some lack the highest rank, and some lack the lowest one.

[9] For details on the rank and the Swedish wage bargaining system, see Calmfors and Forslund (1990), and Kwon et al. (2010).