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The Return to Firm-Specific Human Capital

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The theory of firm-specific human capital is a core part of all courses in Labour Economics. Theory predicts that workers build up firm-specific capital in the current job, which they lose if they leave the current job. Although theoretically clear as a concept, it has proven difficult to estimate a return on specific human capital. The main reason is that current job duration is a function of the wage in the current job compared to outside alternatives. This means that tenure will reflect the level of wages. If wages do not grow sufficiently compared to alternative jobs, the person will quit and tenure will become shorter. Accordingly, workers with more tenure tend to have more specific capital than workers with less tenure. Farber (1999) suggests that firms with more specific capital will adopt more aggressive techniques for retaining their workers.[1] The result will be that workers who have a comparative advantage in accumulating specific capital will tend to become employed by those firms.

Part of the literature tends to ignore some of these problems and estimate returns to tenure using OLS coefficients on experience since the start of the work career and education, among other factors. According to Farber, the usual OLS estimate is a 2% higher wage for each year with the same employer. But this is most likely biased upward, because individual and job specific elements are positively correlated with tenure. Thus, the problem is that the returns to tenure consist of returns to specific human capital and also an element of individual productivity heterogeneity. Following Farber and Addison and Portugal (1989) we estimate the returns to tenure for employees who have lost their job due to firm closures.[2]

Firstly, we estimate the returns to pre-displacement tenure in the pre-displacement job by regressing log earnings in this job on tenure in this job, while controlling for gender, age, education and part-time status. The coefficient on tenure reflects both the return to specific human capital and individual productivity heterogeneity. Secondly,

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[1] Farber, Henry (1999). "Mobility and Stability: The Dynamics of Job Change in Labor Markets." In Orley Ashenfelter and David Card (eds.), *Handbook of Labor Economics*, Volume III, Amsterdam: North-Holland.

[2] Addison, John and Pedro Portugal. (1989) "Job Displacement, Relative Wage Changes and the Duration of Unemployment." *Journal of Labor Economics*, 7(3): 281-302.

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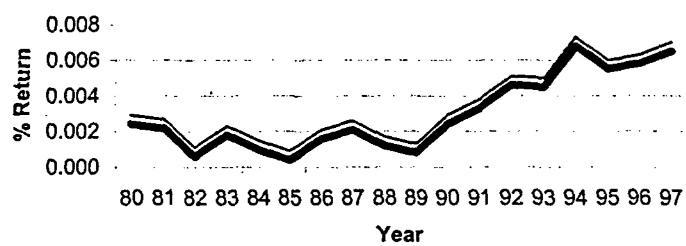
we estimate the returns to pre-displacement tenure on post-displacement earnings by regressing log earnings in the first year of the post-displacement job on tenure in the pre-displacement job with the same control variables. The coefficient on tenure gives the return to individual productivity heterogeneity. The returns to specific human capital can now simply be calculated as the difference in these two coefficients.

The data used in this study originate from Danish administrative registers, and are population-based covering the period 1980 to 1998. Tenure is top-coded at 17, since this is the longest possible consistent measure. In order to get around selectivity problems with displaced workers, we include only persons who have been employed with a firm in the year that it closes and who get a new job elsewhere during the same year.

Separate estimates were produced for each of the 19 years. While the returns to tenure average 2%, and are close to those found using similar techniques with US data, the returns to firm-specific human capital in the later part of the period constitute only about 30% of the overall returns, compared to the US figure of 70%. The estimated return to specific capital appears to be even smaller in 1980.

Figure 1 displays the estimated returns to firm-specific human capital for all years. It is remarkable that the returns are very low until the beginning of the 1990's. They rise after 1991-1992, and become about 30% of the annual wage growth due to tenure from the mid-1990's. This coincides with a decentralization and individualization of wage bargaining that began in the late 1980's.[3] The interpretation is that wages became increasingly less compressed, and to a greater extent, were allowed to reflect the true value of firm-specific capital. It cannot be ruled out that firms use the new freedom to invest more in firm-specific human capital.

Figure 1. Returns to Firm-Specific Human Capital with 95% confidence band.



[3] See Andersen, T.M., B. Dalum, H.Linderoth, V. Smith and N.Westergaard-Nielsen (2001), *The Danish Economy, an international perspective*, Copenhagen.