An Empirical Study on
Industry-specific Components of Productivity*

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I. Introduction

Two well-known facts established in the labor economics literature are (i) a positive relationship between earnings and current job tenure, and (ii) a negative relationship between the probability of job separation and tenure (see for example Borjas and Mincer (1978) and Mincer and Jovanovic (1981)).

The theory of human capital (Becker (1962), Oi (1962), Hashimoto (1981)) provides a consistent explanation of these relationships. According to the human capital theory, workers accumulate firm-specific human capital while employed, and hence wages rise

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above the wage rate attainable in the market as tenure progresses. Firm-specific human
capital makes worker-firm separation costly, regardless of which party incurs the cost of
firm-specific training, and thus discourages both quits and layoffs, leading to a negative
relationship between turnover and tenure.

The distinction between firm-specific and general human capital is based on the extent
to which human capital can be transferred across jobs. Firm-specific training is defined
as training that increases a person’s productivity only in the firm in which he is trained,
while general training increases a worker’s productivity regardless of where he is
employed. In empirical studies, firm-specific and general human capital are measured by
job tenure and labor market experience, respectively, and both are found to be strongly
positively correlated with wage rates or earnings, supporting the human capital theory.

Firm-specific and general human capital are, however, two extreme types of human
capital in terms of across-job transferability, and hence may not be sufficient to ade-
quately represent one’s productivity. A few recent studies (Shaw (1984), McCall (1990))
introduce occupation-specific components of workers’ productivity. These studies provide
evidence for the importance of occupation affiliation and suggest a similar effect of indus-
try affiliation.

This paper attempts to identify industry-specific components of human capital. This is
done by investigating the effect of industry tenure on two types of job mobility, job
changes within an industry and job changes across industries. It is hypothesized that a
portion of human capital is industry-specific, and hence transferable across firms when a
worker changes jobs within the same industry. This implies that a worker favors a job
change within an industry to a job change across industries since he expects better out-
side wage offers in his current industry than in other industries, and that this is more so
for a worker with longer industry tenure.

This paper uses the framework of duration model to investigate the effect of industry
tenure on the two types of job changes. Estimation results reveal that industry tenure
raises intra-industry mobility, but lowers inter-industry mobility. These findings strongly
support the importance of industry-specific human capital.

This paper is organized as follows. Section 2 presents the competing risks hazard model
specification. Section 3 describes the data drawn from the Survey of Income and Program
Participation. Section 4 contains an analysis of nonparametric sample hazard function