

Knowledge Diffusion Within and Across Firms*

Kyle Herkenhoff Jeremy Lise Guido Menzio Gordon Phillips

January 31, 2017

Abstract

[Note: We have initial empirical results that are pending disclosure at the Census.]

We develop a large-firm sorting model to study the way knowledge diffuses within and across firms. We build on [Shimer and Smith \[2000\]](#) and allow for workers within a firm to influence each other's knowledge. In particular, we extend the framework to allow for a given worker's human capital to influence the future path of their coworker's human capital, and vice versa. In contrast to standard sorting models, a firm's type is no longer exogenous; it is given by the distribution of human capital of its workers. Firms are created by workers spinning off and recruiting their own employees which is an important driver of knowledge diffusion. We then use micro wage data and job mobility patterns from the LEHD (the LEHD covers all private sector jobs in the US), as well as startup patterns from the Integrated LBD, to separately estimate the knowledge diffusion process and the degree of worker complementarities in production. The data yield 5 new facts: (1) the number of coworkers has an [X] effect on an individual's wage, (2) the lowest wage coworker has an [X] effect on an individual's wage, (3) the highest wage coworker (superstar) has an [X] effect on an individual's wage, (4) workers with [X] individual wages and [X] coworker wages are more likely to

*Herkenhoff: University of Minnesota. Lise: University of Minnesota. Menzio: University of Pennsylvania, & NBER. Phillips: Dartmouth College, University of Maryland, & NBER. Any opinions and conclusions expressed herein are those of the author(s) and do not necessarily represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed. This research uses data from the Census Bureau's Longitudinal Employer Household Dynamics Program, which was partially supported by the following National Science Foundation Grants SES-9978093, SES-0339191 and ITR-0427889; National Institute on Aging Grant AG018854; and grants from the Alfred P. Sloan Foundation.

start their own business (explicitly controlling for access to credit), and (5) there are [X] sorting patterns, i.e. workers with higher wages are more likely to move to firms that pay [X] average wages. We use fact (5) to estimate worker complementarities in production and we use facts (1) through (4) to discipline the knowledge diffusion process. We then use the estimated model to study various counterfactuals, including the way labor market distortions, such as firing taxes, impede mobility and affect the diffusion of knowledge.