

Abstract for “Intangibles and Performance”

Wendy Li (U.S. Bureau of Economic Analysis)

We applied the newly developed non-linear GMM estimation method by Li and Hall (2013) to estimate the depreciation rates of organizational capital and R&D assets in 10 R&D intensive industries and to construct the associated time series of the capital stocks of these two types of intangibles. The data source is the Compustat dataset and the data cover the period of 1987-2011.

This research produces three major results. First, in general, R&D assets depreciate faster than organizational capital in both industries, which is consistent with the recent finding by Bloom and Reneen (2010) that the evolution of management practices is slow and new improvements take time to diffuse across firms.

Second, in the computer peripheral and the computer system design industries, after the dot-com crash, the industry leaders have a decreasing R&D capital ratio which suggests that the leaders have allocated more resources to other non-R&D intangible investments. However, for the software and the semiconductor industries, the R&D capital ratio is continuously increasing.

Third, the time-varying results capture the heterogeneous nature of industry environments in technology and competition. For example, combining our depreciation pattern in the semiconductor industry with the evidence of a slower pace of productivity growth in the same industry after 2000 (Jorgenson et al., 2012), we find support to Jorgenson’s hypothesis (2001) that the increase in the pace of technological change is positively related to faster productivity growth.