

Abstract: Aggregate productivity growth and the role of input reallocation have been hotly debated. Yet, it has received little attention as to how the measurement of reallocation relies on the commonly-made assumption that a production technology is uniform within an industry. To quantify the effects of unobserved heterogeneity in production technology, we estimate a random-coefficient Cobb-Douglas production function. We identify plant type from the distribution of the intermediate inputs to sales ratio using the first order condition without permanent distortions in intermediate input markets. The empirical analysis uses plant-level data from the Census of Manufacture. We find that accounting for unobserved heterogeneity lowers the volatility of technical efficiency and reallocation contributions. For knitted garments industry that features large dispersion in the intermediate input share, the average growth rate of the reallocation component over the 5-year period after the bubble burst in Japan is -0.5% with heterogeneity, while it is 0.4% without heterogeneity.