Competition by Technique Up or Cost Down?

Evidence from the IT Industry with Sectoral Misallocation

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Abstract

What is the relationship between the production flexibility and the observed firm-level performance such as productivities, development of production techniques and ease of adjustment in factor allocations within a high-technology sector? This question is left unexplored though a vast Business literature on manufacturing flexibility and production efficiency. This is because the concept of production flexibility has not been formalized or rigorously studied theoretically in the existing studies and the lack of disaggregated firm-level data of operational details in the interested IT manufacturing sectors. To remedy these two problems, this proposal formalizes the concept of “production flexibility” using a constant elasticity of substitution (CES) production function. This specification in turn allows us to calibrate industry and firm-level production function parameters, using an anticipated constructed clean data set of the foundry industry with giant duopolists producing over 70 percent of the world products. This enables us to gain better insight toward understanding the duopolists’ technology flexibility choice and their consequences for factor allocation and production efficiency. Such an endeavor also permits counterfactual policy experiments using a structural model consistent with the empirically observed industry framework.

Keywords: Production Flexibility, Productivity, Adjustment Cost, Counterfactual Analysis, Semi-conductor Foundry Industry.

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