The Origins of Firm Heterogeneity: A Production Network Approach*

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Abstract

This paper quantifies the origins of firm size heterogeneity when firms are interconnected in a production network. We document new stylized facts about the universe of buyer-supplier relationships among all firms in Belgium during 2002-2014. These facts motivate a model in which firms buy inputs from upstream suppliers and sell to downstream buyers and final demand. Firms can be large not only because they have high production capability (i.e. productivity or product quality), but also because they interact with more, better and larger buyers and suppliers, and because they are better matched to their buyers and suppliers. The model delivers an exact decomposition of firm size into supply and demand margins with firm, buyer/supplier and match components. We establish three empirical results. First, demand factors explain 81% of firm size heterogeneity, while supply factors only 19%. Second, nearly all the variation on the demand side (99%) is driven by sales to other firms rather than final demand. By contrast, 88% of the variation on the supply side reflects heterogeneity in own production capability and 12% comes from input suppliers. Third, the extensive margin of the production network dominates the intensive margin. Most of the variance in the network demand and network supply components of firm size is determined by the number of customers and suppliers, rather than their size or capability. Second most important is that firms transact more with partners that are simultaneously more capable and better bilateral matches.

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