

As the Door Closes: Export Fixed Costs and Cascading Effects in the Global Production Network

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Non-tariff barriers (NTBs) have increasingly replaced tariffs as the primary instruments of trade policy. Unlike tariffs, many NTBs operate through regulatory or compliance requirements that impose fixed or sunk costs on firms before they can access foreign markets. Such barriers directly affect firms' entry and export participation decisions and, through endogenous selection, indirectly reshape marginal costs and prices. While the trade literature has largely focused on marginal trade frictions (i.e. tariffs) and the production-network literature has analyzed propagation mechanisms in mostly closed economies, little is known about how fixed-cost trade barriers interact with global input-output linkages when firm selection is endogenous. This paper develops a multi-country, multi-sector framework with heterogeneous productivity to study how fixed-cost shocks reshape firm entry, production networks, and aggregate welfare.

Our framework is organized around two equilibrium centrality measures—supplier centrality and consumer centrality—that summarize how shocks propagate through the global production-trade system. In a multi-country environment with heterogeneous firms and endogenous entry, these centralities are not purely exogenously given: they depend on firm mass, weighted productivity, and markups, and therefore become endogenous to fixed-cost shocks. We show that changes in export fixed costs simultaneously alter the extensive margin of firm participation and the composition of surviving firms, thereby reweighting network propagation even when the underlying input-output matrix is held fixed. This representation delivers a unified characterization of domestic market size, bilateral trade flows, and welfare. Using equilibrium centralities, we derive closed-form decompositions showing how fixed-cost shocks transmit through both upstream production linkages and downstream demand channels. Welfare effects decompose into a negative extensive-margin effect—reflecting the contraction of varieties amplified by production networks—and a positive selection effect—reflecting improvements in weighted productivity. The overall effect is generally ambiguous and depends on the interaction between firm heterogeneity and network structure. The framework nests existing models as special cases. In a closed economy, it reduces to a production-network model in the spirit of Baqaee (2018), while the introduction of heterogeneous productivity generates an additional endogenous selection channel absent in homogeneous-firm settings. In a single-sector open economy without input-output linkages, it collapses to a standard trade model, clarifying how importing countries may benefit from productivity reallocation induced by fixed-cost adjustments.

We combine three datasets to discipline the model and document stylized facts. First, we use SPS and TBT notifications from 1995–2025 to document the rapid rise of non-tariff barriers operating through regulatory channels. Second, we exploit detailed Chinese customs data around the 2011 rare-earth export restrictions to illustrate how fixed-cost-type regulations reshape firm entry, export varieties, and prices. Third, we use the World Input-Output Database to map sectoral production linkages and quantify how shocks propagate through global networks.

Our paper contributes to three strands of literature. First, relative to the production-network literature (Acemoglu et al., 2012, 2016; Baqaee, 2018; Baqaee and Farhi, 2020, 2024), we introduce international trade and heterogeneous firm selection into a multi-sector general equilibrium framework. In contrast to closed-economy models in which network centrality is primarily determined by technological linkages, fixed-cost shocks in our setting endogenously reweight network propagation through changes in firm mass and weighted productivity. Second, relative to the quantitative trade literature (Eaton and Kortum, 2002; Krugman, 1992; Melitz, 2003), we embed trade in an input-output network environment. Standard trade models focus on marginal trade

costs and largely abstract from production-network amplification. By contrast, our framework shows that fixed-cost shocks operate on the extensive margin and interact with production linkages, generating general-equilibrium feedback effects that cannot be captured by trade elasticities alone. Third, our analysis complements empirical studies of NTBs and fixed-cost barriers by providing a unified structural framework that links regulatory trade barriers to endogenous firm selection, network centrality, and aggregate welfare.