

Knowledge Diffusion, Trade and Innovation across Countries and Sectors

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Abstract

Sectors and countries are heterogeneous in their innovation intensity, knowledge diffusion, and production patterns. However, standard models of trade and innovation do not model explicitly this heterogeneity. We develop and quantify a multi-country and multi-sector model of innovation, knowledge diffusion and trade to study the role of sector heterogeneity on aggregate R&D and welfare after a trade liberalization. A decrease in trade costs induces a reallocation of innovation towards sectors in which the country has a comparative advantage, as well as sectors with strong knowledge diffusion. Moreover, after a trade liberalization: (i) the cross-country distribution of welfare gains from trade is more disperse when we allow for cross-sector heterogeneity in production linkages, and (ii) the distribution shifts to the right when we allow for heterogeneity in R&D intensity and knowledge flows. Different from previous models of trade and innovation, changes in trade barriers have a non-negligible effect on both aggregate innovation and welfare when there is sector heterogeneity and knowledge spillovers.

Keywords: Technology Diffusion; R&D; Patent Citations; International Trade

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