

How do Patents Shape Global Value Chains?

International Patenting, Value-Added Trade and Production Stages

Nikolas Zolas

U.S. Census Bureau

Abstract

Intellectual property plays an important role in the global economy through its impact on technology diffusion, knowledge transfer and competition. As production becomes increasingly unbundled worldwide, the role of patents in protecting and licensing different stages of the production processes becomes increasingly important. International patents transmit technical knowledge abroad that can be licensed and utilized by the firms' suppliers, leading to increased product flows back to the parent company and elsewhere, as well as knowledge spillovers into other sectors of the economy. Patents also indicate ownership of the specific production stage by the parent, providing researchers with evidence for how the production chain is organized. In this paper, we exploit a newly developed algorithmic concordance that links patents to industry and trade classifications to characterize how patents affect the organization and structure of global value chains. Using two independent sources covering more than two dozen industries and 150+ countries, we find that increased international patenting is associated with greater production fragmentation and leads to movements within value chains for country-industry pairs. This effect is particularly strong for "imported" or inbound international patent applications, with greater heterogeneity across countries than industries.