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R&D Capital, R&D Spillovers, and Productivity Growth in World Agriculture

Keith Fuglie

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Abstract

Increasing the world’s food supply has depended heavily on increasing agricultural productivity, which in turn depends on investments in research and development (R&D). This article synthesizes findings from more than 20 studies on how R&D investments affect agricultural total factor productivity (TFP) in various parts of the world. The article breaks out the relative contributions to TFP growth of R&D by public institutions, private companies, and the CGIAR (a consortium of international agricultural research centers), including international technology spillovers. Major differences emerge between global regions in sources and efficiency of R&D capital. Developed countries appear to have benefited more from private and international R&D spillovers than developing countries.
Submitted Article

R&D Capital, R&D Spillovers, and Productivity Growth in World Agriculture

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Keith Fuglie is an economist with the Economic Research Service of the USDA. The views expressed in this paper are the author’s own, and no endorsement by the USDA or Economic Research Service should be inferred.

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Abstract: Increasing the world’s food supply has depended heavily on increasing agricultural productivity, which in turn depends on investments in research and development (R&D). This article synthesizes findings from more than 40 studies on how R&D investments affect agricultural total factor productivity (TFP) in various parts of the world. The article breaks out the relative contributions to TFP growth of R&D by public institutions, private companies, and the CGIAR (a consortium of international agricultural research centers), including international technology spillovers. Major differences emerge between global regions in sources and efficiency of R&D capital. Developed countries appear to have benefited more from private and international R&D spillovers than developing countries.

Keywords: Agricultural total factor productivity, R&D elasticities, R&D lags, technological obsolescence.

JEL codes: Q13, Q16.