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International trade, economic growth and intellectual property rights: A panel data study of developed and developing countries

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Abstract

This paper examines the role of high-technology trade, IPRs and FDI in determining a country's rate of innovation and economic growth. The empirical analysis is conducted using a unique panel data set of 47 developed and developing countries from 1970 to 1990. The results suggest that: (1) high-technology imports are relevant in explaining domestic innovation both in developed and developing countries; (2) foreign technology has a stronger impact on per capita GDP growth than domestic technology; (3) IPRs affect the innovation rate, but this impact is more significant for developed countries; (4) the results regarding FDI are inconclusive.

JEL classification: O3; O4; F1
Keywords: Trade and technological diffusion; Innovation; Intellectual property rights

1. Introduction

The benefits of international trade for economic growth and development are difficult to understate. Imports bring additional competition and variety to domestic markets, benefiting consumers, and exports enlarge markets for domestic production, benefiting

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businesses. Trade exposes domestic firms to the best practices of foreign firms and to the demands of discerning customers, encouraging greater efficiency. Trade gives firms access to improved capital inputs such as machine tools, boosting productivity and providing new opportunities for growth for developing countries. Until recently, the neoclassical growth model (Solow, 1956; Swan, 1956) was the main theoretical framework used to explain economic growth. However, that framework does not offer a formal link between trade policies and long-run growth.

The development of endogenous growth models (Romer, 1990; Grossman and Helpman, 1991; Rivera-Batiz and Romer, 1991; Aghion and Howitt, 1992) provides such link and suggests different channels through which trade could affect economic growth. One idea is that imports may embody innovations that are not available in the local economy, and local researchers may gain insights from these innovations. Therefore, by providing access to foreign innovations, trade can promote technological diffusion and economic growth.

Previous research has shown a positive link between trade in physical goods and technological diffusion. Some of these studies have focused on general imports as a channel for technological diffusion (Coe and Helpman, 1995; Coe et al., 1997, Eaton and Kortum, 1996, 1997; Keller, 1997). Other studies have looked at a more disaggregated measure of imports (Wang and Xu, 1997; Connolly, 1998; Keller, 1999). However, most of these studies have focused on developed countries.[1]

The motivation for this paper comes from the fact that many theoretical models suggest that technological diffusion among developed countries might differ from technological diffusion between developed and developing countries.[2] Additionally, in its 1998/1999 Development Report, the World Bank emphasizes the importance of openness, stronger intellectual property rights (IPRs) and foreign direct investment (FDI) as important channels for acquiring imported knowledge, especially in developing countries (World Bank, 1998b). The investigation of these issues requires empirical work that includes both developed and developing economies, since policy recommendations that arise from this kind of analysis may have very different effects on these two groups of countries.

This paper conducts an empirical investigation of the role of trade in determining the rate of innovation and economic growth in developed and developing countries, and investigates the importance of IPRs and FDI in these processes. FDI has been identified in the literature as another important channel for technological diffusion (Grossman and Helpman, 1991; Helpman, 1993). Additionally, patent regimes could be an additional factor in the relationship between trade and growth. As suggested by Maskus and Penubarti (1995), returns to innovation could be influenced by variations in international patent laws, with a primary channel being decisions by firms to trade in different markets.[3]

More specifically, this paper focuses on three main questions: (1) Does trade promote innovation and growth by providing access to foreign technology? (2) How important are

[1] Only Coe et al. (1997) and Connolly (1998) include developing countries in their sample.

[2] For example, Grossman and Helpman (1991), Segerstrom et al. (1990), Helpman (1993), Barro and Sala-i-Martin (1997), Chui et al. (2001).

[3] For more on the discussion on the link between trade and IPRs, see Segerstrom et al. (1990), Grossman and Helpman (1991), Helpman (1993) and Taylor (1994).