

# Creating competition? Globalisation and the emergence of new technology producers

Suma Athreye<sup>a,\*</sup>, John Cantwell<sup>b,1</sup>

<sup>a</sup> Brunel Business School, Brunel University, Uxbridge UB83PH, UK

<sup>b</sup> Rutgers Business School at Newark and New Brunswick, 111 Washington Street, Newark, NJ 07102-3027, USA

Received 10 October 2005; received in revised form 11 October 2006; accepted 7 November 2006

Available online 2 January 2007

## Abstract

This paper studies the role of globalisation (through trade, inward FDI and international migration) in the emergence of new countries as contributors to technology generation in the world economy. Increasing FDI is a factor causing the emergence of newer countries with the more sophisticated technology generation associated with patenting, but not in the recent surge of newer countries with the basic capabilities needed to become licensors in the world economy. Yet increases in the international spread of subsidiary research efforts in MNCs have tended on average to reinforce the position of established centres of higher grade technological activity.

© 2006 Elsevier B.V. All rights reserved.

*JEL classification:* O33; F23; O19; F43; O57

*Keywords:* Technology; Innovation; Patenting; Licensing; Globalisation

## 1. Introduction

There is considerable debate on the issue of whether new countries in the developing world are catching-up in technological capabilities and if they can emerge as significant producers of technology. Case studies suggest that countries like Ireland, Israel and India have emerged as significant exporters of technologically sophisticated products and services. A significant proportion of multi-

national company R&D has moved to countries of developing Asia—estimates suggest that the share of US affiliate R&D in Canada, Japan and Europe relative to the world as a whole decreased from 94% in 1989 to 85% in 1999, while the share of developing Asia grew from less than 1% to over 7.7%.<sup>1</sup> Yet our knowledge remains limited of whether this transfer of R&D has been associated with technological generation from new countries to a significant extent.

However, we also live in times when the unprecedented globalisation of the last two decades is under threat. On the one hand, researchers concerned with the development of poor countries in Africa are campaign-

\* Corresponding author. Tel.: +44 1895 265410; fax: +44 1895 269775.

*E-mail addresses:* [Suma.Athreye@brunel.ac.uk](mailto:Suma.Athreye@brunel.ac.uk) (S. Athreye), [Cantwell@rbsmail.rutgers.edu](mailto:Cantwell@rbsmail.rutgers.edu) (J. Cantwell).

<sup>1</sup> Tel.: +1 973 353 5050; fax: +1 973 353 1664.

<sup>1</sup> US Department of Commerce as cited in [Beausang \(2004\)](#), Table 1.

ing for Developed Market Economies to open a larger part of their market. Larger developing countries such as India and Brazil have also intervened aggressively for a fair deal in trading during the Doha and Cancun rounds of the WTO negotiations. On the other hand, recent trends in the outsourcing of intellectual labour have given rise to the fear in Developed Market Economies that they stand to lose their comparative advantage in knowledge-intensive products as new countries emerge with the basic capabilities needed to provide some technology-based services. At least two recent works on international trade by eminent economists argue that these fears may be well founded. Gomroy and Baumol (2000) show that in a multi-country, multi-product setting where international trade is based mostly on created comparative advantages and economies of scale, the terms of trade consequences of productivity improvements among trading partners may be such that the classical argument that free trade benefits all countries is overturned. In a similar vein, Samuelson (2004) has argued that productivity growth in trading partners may sometimes ‘permanently harm’ the trading country.

These concerns about the possibilities and consequences of productivity growth in trading partners are also closely related to the discussion of technological catch-up of developing economies, especially in the context of North-South trade. Increases in productivity in developing economies often start with simple technology transfer type activities, facilitated by openness and then proceed through investments by firms in capability building (within economies of the South) to become distinctive niches that underlie the competitive advantages of these nations.

There are two reasons to expect that the relationship between technological catch-up and globalisation vary with whether countries are at earlier stages of development that require simpler capabilities, or have entered a more mature phase of development that relies on sophisticated capabilities. First, when building simpler capabilities smaller firms may play a more prominent independent entrepreneurial role, and there is less need for organisational complexity and interconnected network structures. Therefore, earlier technological catch-up relies less upon a system for sustained and continuous international knowledge exchanges and interdependencies (of the kind that are facilitated by trade and FDI), but depends more in the first instance upon indigenous learning efforts. Second, the recent rise in technology trade and the outsourcing of knowledge-related functions that has accompanied the fragmentation of value chains has created new opportunities for those with at least basic capabilities in

what were formerly less well internationally interconnected locations, especially in developing countries. Some countries with basic capabilities may thus now be able to establish new niches for themselves in international knowledge creation that does not depend on an already prevailing system of trade and FDI.

Our paper aims to contribute to these debates and their concerns. Its novelty lies in providing a quantitative assessment of the periods when new countries emerged as technology producers (thus demonstrating technological catch-up), and assessing how different phases and dimensions of technological catch-up are related to globalisation. We are able to distinguish between the earlier phases of technological catch-up that rely on the building of simpler capabilities, by utilising a new source of data, viz. cross-border licensing revenue data. The attainment of higher level technology based competitiveness is captured (as in other work on the subject) by the inventive sources of patenting. The paper pays attention to different dimensions of globalisation in the world economy—openness to trade, share of foreign direct investment (FDI), the use of international locations as sources for patenting by multinational corporations (MNCs), and the proportion of the world’s population that migrated between countries.

Indeed, our empirical findings suggest a strong role for increasing inward direct investment in the world economy as a factor inducing the emergence of new countries as patentees (which usually does require international knowledge interdependencies), but only some ambiguous evidence that greater openness to international trade explains the recent surge of new countries as licensors in the world economy. We interpret the latter finding as suggestive of the important role played by exogenous factors such as the emergence of generic technologies that have facilitated the growth of technology trade often in intangibles as argued by Athreye (1998) and Arora et al. (2001). However, patenting by MNCs from international sources (that is, from the innovative efforts of their subsidiaries abroad) is enhanced by a weakening of the possibilities for trade. This is what we would expect from internalisation theory of the MNC (Buckley and Casson, 1976), but it may also be the case even without the internalisation of a former market (trade) connection that when openness to trade declines, host countries rely to a greater extent on a local presence by the subsidiaries of foreign-owned MNCs to foster technology creation, as opposed to international business knowledge linkages that come through trade and subcontracting.

However, when international knowledge linkages are created through FDI, it facilitates the consolidation of

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات