



Available online at www.sciencedirect.com

SCIENCE @ DIRECT®

International Journal of Industrial Organization
22 (2004) 1237–1263

International Journal of
Industrial
Organization

www.elsevier.com/locate/econbase

Heterogeneity in R&D cooperation strategies

René Belderbos^a, Martin Carree^b, Bert Diederer^c,
Boris Lokshin^{b,*}, Reinhilde Veugelers^d

^a*Katholieke Universiteit Leuven, Belgium and Eindhoven University of Technology, The Netherlands*

^b*Universiteit Maastricht, The Netherlands*

^c*Statistics Netherlands, Heerlen, The Netherlands*

^d*Katholieke Universiteit Leuven, Belgium and CEPR*

Received 13 August 2003; received in revised form 26 March 2004; accepted 24 August 2004

Available online 7 October 2004

Abstract

We explore heterogeneities in the determinants of innovating firms' decisions to engage in R&D cooperation, differentiating between four types of cooperation partners: competitors, suppliers, customers, and universities and research institutes (institutional cooperation). We use two matched waves of the Dutch Community Innovation Survey (in 1996 and 1998) and apply system probit estimation. We find that determinants of R&D cooperation differ significantly across cooperation types. The positive impact of firm size, R&D intensity, and incoming source-specific spillovers is weaker for competitor cooperation, reflecting greater appropriability concerns. Institutional spillovers are more generic in nature and positively impact all cooperation types. The results appear robust to potential simultaneity bias.

© 2004 Elsevier B.V. All rights reserved.

JEL classification: O30; O32; L13

Keywords: Heterogeneity; R&D cooperation; Innovating firms

* Corresponding author. Department of Organization and Strategy, Faculty of Economics and Business Administration, Universiteit Maastricht, PO Box 616, 6200 MD Maastricht, The Netherlands. Tel.: +31 43 388 3697; fax: +31 43 325 4893.

E-mail address: B.Lokshin@os.unimaas.nl (B. Lokshin).

1. Introduction

The growing role of R&D collaboration in firms' innovative activities (Hagedoorn, 2002) has spurred research into the determinants of R&D cooperation and the effects of cooperative R&D. Two major strands of theoretical literature can be distinguished. The Industrial Organization (IO) literature has extensively examined the incentives and welfare effects of R&D cooperation among competing firms, focusing on the role of R&D investments and R&D spillovers. Theoretical contributions in the management literature have stressed that R&D collaboration aims at minimizing transaction costs and exploiting complementary know-how between partner firms (e.g. Kogut, 1988; Das and Teng, 2000). Empirical work on R&D cooperation has utilized micro-level survey data from the European Community Innovation Surveys (CIS), and has focused mainly on the impact of firm size and R&D intensity as determinants of cooperation (Becker and Dietz, 2002; Leiponen, 2001; Kaiser, 2002; Veugelers, 1997).

Most of the existing literature does not distinguish R&D cooperation by type of partner (e.g. competitors, suppliers, clients, universities) but instead aggregates over R&D cooperation types, with some notable recent exceptions. Kaiser (2002) distinguishes between vertical cooperation (cooperation with suppliers and customers) and a mix of other R&D partnerships in analyzing cooperative R&D by German service firms. Cassiman and Veugelers (2002), using CIS-I data on Belgian firms in 1994, distinguished between university–firm cooperation and cooperation with vertically related partners, but did not consider cooperation with competitors. Fritsch and Lukas (2001) differentiate cooperation by type of partner to focus on the impact of firm size and R&D intensity on the propensity to cooperate among German manufacturing firms. Tether (2002) distinguishes suppliers, customers, competitors, universities and consultants in his sample of UK CIS-II firms. Leiponen (2001) considers cooperation with competitors, customers, suppliers and universities using 1997 CIS data for Finnish manufacturing firms. These studies have in common that they only had cross-section data at their disposal and hence have grappled with the problem of a simultaneous relationship between R&D cooperation and R&D intensity and spillovers. Another feature of these studies is that they have treated the different cooperation strategies as independent, not taking into account possible correlations between the strategies that could be due to complementarities.

In this paper we consider heterogeneity in R&D cooperation by exploring differences in the determinants of innovating firms' decisions to establish different types of cooperation: with competitors (horizontal), with suppliers or customers (vertical), and with universities and research institutes ('institutional' cooperation). We take into account a broad set of possible explanatory variables, but we concentrate particularly on the impact of different types of spillovers, a central focus in the industrial organization literature. Furthermore, while previous studies have investigated the propensity to establish different types of R&D partnerships in separate models, we allow for possible correlations between R&D cooperation strategies, by applying a system method of estimation for dichotomous variables. In addition, we are able to limit simultaneity bias by employing lagged explanatory variables utilizing two waves of Dutch CIS surveys in 1996 and 1998. We further check the robustness of the results to potential simultaneity

متن کامل مقاله

دریافت فوری ←

ISIArticles

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