Introduction to Part I

The proliferation of a wide variety of inter-organizational cooperative agreements since the early 1980s has created the need for new definitions of cooperation (Hagedoorn and Schakenraad, 1990; Nooteboom, 1999). The term ‘strategic alliance’ was thus invented to encompass the multitude of forms these agreements have taken. According to one definition, a strategic alliance is a web of agreements whereby two or more partners share the commitment to reach a common goal by pooling their resources together and coordinating their activities (Teece, 1992). An alliance denotes some degree of strategic and operational coordination and may also include things such as technology exchanges, exclusionary market and manufacturing rights, and co-marketing agreements.

Collaborative arrangements can take many forms (Hagedoorn, Link and Vonortas, 2000; Littler, Leverick and Wilson, 1998): from formal collaboration, founded on an explicit, common purpose agreed by the parties and based on explicit contracts, to informal collaborations involving more tacit and casual relationships. It may take place between and among customers, suppliers, competitors, or even between organizations that just share some common expertise. An increase in the joint projects launched by companies with public research institutes and universities has been pointed out by many scholars (Caloghirou, Tsakanikas and Vonortas, 2001; Georghiou, 1998), along with a steady growth of interfirm alliances during the 1980s (Contractor and Lorange, 1988; Mytelka, 1991; Chesnais, 1988; Hagedoorn, 2001).

We focus in this book on collaboration on technological issues (Dodgson, 1993), and especially on Research Joint Ventures. RJVs are defined as organizations, jointly controlled by at least two participating entities, whose primary purpose is to engage in cooperative research and development (R&D). RJVs engage companies, universities and/or government agencies and laboratories in various combinations to pool resources in pursuit of a shared R&D objective. An alternative term for RJVs – the way we define them in this book – is research partnerships (RPs). We will use the terms RJV and RP interchangeably.

Collaboration in R&D is one of the most popular types of collaboration. The strategic choice of firms to perform common research activities either with other firms or other types of actors has attracted the attention not only

of economists and business strategy scholars, but of policy analysts as well. Empirical analysis has shown that major objectives of firms when entering cooperative R&D agreements include cost and risk sharing, accessing complementary resources and skills, and exploiting research synergies along with keeping up with major technological developments (Caloghirou and Vonortas, 2000). An extensive literature has dealt with knowledge-based linkages. Among others, we can cite Hagedoorn's (1995) and Duysters & Hagedoorn's (1996) examination of private alliances focused on technological issues that have been created without any external source of funding. Vonortas (1997a) also provides information about RJVs that have been established in the US and registered under the National Cooperative Research Act (NCRA). *Strategic Research Partnerships* by Jankowski, Link and Vonortas (2001) includes several pieces addressing the question of RP indicators. There is also a voluminous body of literature focusing on specific subsets of linkages at the national or even at a sectoral level, examining the effectiveness of national or regional policies towards the promotion of cooperation among various types of actors (McFarlane, 1999; Miyata, 1996; Odagiri et al., 1997; Wang, 1994; Beecham and Cordey-Hayes, 1998; Staropoli, 1998; Aldrich and Sasak, 1994).

The book focuses on a special form of collaborative R&D: subsidised RJVs that have been established through project-based ventures in the European Research Area. The research partnerships that we examine are contractual agreements among independent entities, with at least one member of the consortium being a firm. Other member entities may include firms, universities, research institutes and other organizations.

The empirical analysis is firmly based on relevant economic, business and policy literature. This literature has indicated a long list of potential benefits and costs to cooperative R&D. Potential benefits to participating organizations include:

- R&D cost sharing;
- Reduction of R&D duplication;
- Risk sharing, uncertainty reduction;
- Spillover internalization;
- Continuity of R&D effort; access to finance;
- Access of complementary resources and skills;
- Research synergies;
- Effective deployment of extant resources; further development of resource base;
- Strategic flexibility, market access and the creation of investment 'options';
- Promotion of technical standards;

- Market power; co-opting competition;
- University and research institute research, better attuned with private sector interests.

Potential costs to RJV participants include:

- Actual resources devoted to the cooperative R&D activity;
- Incompatibility with company (or university) interests;
- Delay of technological advance (due to collusion);
- Loss of control to a vital technology.

Cooperative R&D also creates social benefits (and costs) that accrue to non-participating organizations and the rest of society. Social benefits may be the result of:

- Knowledge spillovers to non-participants;
- Increased industrial competitiveness;
- Increased levels of competition;
- Favourable changes in investment behaviour;
- More efficient establishment of technology standards;
- Broad socio-economic benefits as a result of structural adjustment, employment, and so on;
- Increased economic cohesion between European regions.

Potential social costs may be the result of:

- Anti-competitive behaviour;
- Limiting the number of R&D approaches to uncertain technological problems;
- Creating dependencies on public resources;
- Wasting taxpayers' money.

The insights of prior research were synthesized in five broad topical areas that this research project dealt with:

- Trends in RJV formation in Europe; characteristics of RJVs and participating organizations.
- Determinants of RJV formation.
- Performance of the RJV *per se*.
- Impact on firms participating in the RJV.
- Meso- and macro-economic level impacts for Europe, including competitiveness and cohesion.

- Development and comparison of policies promoting RJVs in Europe, the United States and Japan.

The chapters of Part I deal with the theory on cooperative R&D and the empirical analysis of European RJVs. While the underlying material in this section reflects the collaborative effort of all seven consortium partners in the TSER project, senior analysts of the project coordinator have written the individual chapters. Chapter 2 concentrates on the theory of RJVs. Chapter 3 recounts the main trends of publicly-funded, European-based RJVs. Chapter 4 illustrates the strategic considerations of European firms when forming RJVs and the expected tangible and intangible returns from this activity. Chapter 5 focuses on the qualitative evidence from the interview-based studies of more than twenty RJVs dealing with contextual issues and with issues related to the quality of the relationship among partners, information sharing in the RJVs, membership differences and limitations of collaboration. Chapter 6 summarizes the results of empirical work on the determinants of RJV formation, RJV performance and the impact of RJVs on industries and regional economies. Finally, a concluding section pulls together the main empirical findings.

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