

## The Impact and Effectiveness of Policies to Support Collaboration for R&D and Innovation

The benefits arising from research collaboration are clear, and have long been recognised by those working both in the public (academic) and private sectors. There is a comparatively long history regarding measures to foster longer-term cooperation between science and industrial actors and these now represent a significant part of the portfolio of innovation policy support measures in many countries. This report focuses on the evidence on the effectiveness of the publicly supported schemes that aim to promote or enhance collaborative innovation activities between firms and, what may broadly be termed, the science base -i.e. public laboratories and research institutes and Higher Education Institutions, particularly universities. Firms collaborate with each other for a number of reasons: i) saving transaction costs where there are incomplete contracts, ii) attaining economies of scale and scope, iii) using networks as a way to increase synergy, efficiency and power, iv) accessing complementary resources to exploit firms' own resources and learning from partners, thereby creating new capabilities and thus enhancing competitiveness, v) creating and exploiting high risk high opportunity situations, vi) decreasing R&D costs by pooling risks and co-opting competition. They also collaborate with universities in order to access leading edge research knowledge, research infrastructures or research services, to develop in-house capabilities or to identify potential future employees. Universities collaborate with firms to access industrial capabilities and resources, to commercialise research ideas or test their commercial potential, to develop 'real world' links and build experience or to develop potential career pathways for students. Governments support these links due to economies of scope and scale, the need to internalise informational spillovers, the fact that collaborative projects can be too complex for single actors and the need for providing the medium for knowledge transfer. The evaluations of collaborative schemes share several challenges common to the evaluation of other innovation support schemes. First, timing and periodicity pose an issue for evaluation of schemes for collaboration. While formal collaborative arrangements are comparatively easy to identify from their outset, several further anticipated outcomes and impacts are not likely to manifest until sometime into, or even after the completion of, the collaborative arrangement. Furthermore, collaborative arrangements develop and mature over time. Secondly, defining the scope of impact can be challenging. Although certain metrics may capture the overall outcomes of a programme, the outputs and experiences of individual projects and relationships may be difficult to discern. Third, it is difficult to identify the types of outcome and impact that arise from a collaborative relationship in the absence of counterfactual examples or benchmarks established prior to the formation of the collaborations. Finally, due to the increase of the significance of informal collaborative links, and the tacit nature of their outcomes and effects, the search for suitable metrics faces severe problems. This report reviews the evidence on the effectiveness of innovation policy schemes for collaboration within a number of evaluation reports and the academic literature. The evidence reviewed is organised around the issues of input additionality, output additionality, behavioural additionality and programme design and governance. It also discusses five important thematic issues including the evaluation of the Alvey Programme, evaluations of the EUREKA Programme, Japanese experience with collaborative R&D support, CIS based evaluations of collaboration, and finally, a series of evaluations of Australia's Cooperative Research Centres Programmes. In a final section this report proposes a set of general lessons for the design and implementation of collaborative support instruments, i.e. the typical pre-conditions for success. Regarding the programme design, it is concluded that some of the most successful measures are seen to be associated with a long-term, stable commitment of government funding and support. Our findings also highlight the importance of clearly defining the purpose of the programme in advance. It is also important to recognise that there are many reasons for which participants may wish to collaborate. For several reasons, it may become necessary to adjust the underlying rationale and objectives of a programme. Programme managers must be sensitive to these changes and be prepared to adjust the configuration of the programme and, at the same time, to reconfigure the ways in which performance is judged. Collaborative activities do not proceed in isolation. Thus, it is important to align collaborative support programmes within a broader supporting and complementary set of policies which can capitalise on their outcomes. Furthermore, the programme impact was found to be enhanced through the inclusion of an educational objective, such as the production of post-graduate students who were able to gain experience of project management in an

industrial context. As regards the selection of participants, programme success was found to be closely aligned with the characteristics of the participants. This implies a need for matching partners with a track record of collaboration with new partners or defining new areas and topics for collaboration. Our review has important conclusions for programme governance. The management of collaboration initiatives is a major determinant of success, particularly in collaborations which involve novel partnerships, new research topics or where the anticipated research outcome cannot be guaranteed or the potential for unexpected outcomes is high. Furthermore, in long-term collaborative programmes it is important to define clear exit points and processes to allow for changes in partners and participants to be effectively managed whilst avoiding high turnover rates and the sudden loss of key partners. We also found that effective collaboration depends on mutual trust - that workloads and benefits will be shared equitably and that shared information will remain within the confines of the partnership. Moreover, strong governance and audit arrangements are closely associated with programme success. Perhaps most importantly, our review reveals that at all stages of the programme/project lifecycle, bureaucracy should be minimised. Finally, the fostering of a strong and positive brand image was found to increase the attractiveness of the scheme to high-quality participants, to increase motivation through a sense of 'belonging' and recognition and to increase the likelihood of additional networking throughout the programme rather than between the collaborating partners alone. A final set of conclusions relates to lessons for evaluation and future research needs. The report concludes that evaluations must be sensitive to the complexity of the collaboration process, and the diversity of motivations, rationales, activities, outputs, outcomes and effects which it entails. Furthermore, the issue of timing is also prevalent in the evaluations of innovation policy measure for collaboration. We also found that the issue of causality is a particular methodological problem frequently encountered in the literature and evaluation reports.

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