



Australia's Cooperative Research Centre Program: A transaction cost theory perspective



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ABSTRACT

Cooperative Research Centres (CRCs) in Australia are underpinned by funding from the Australian Government. Among their many goals, they are intended to lead to long-term sustainable relationships between industry and academic institutions without the need for further public funding. Yet concerns have been raised in various reports and reviews about the ability of CRCs to achieve sustainable collaboration beyond their initial seven-year life, despite the general observation that CRCs have proved beneficial to the broader Australian community and the economy in general. This study adduces Transaction Cost Theory to determine the impediments to long-term sustainable collaboration between industry and academia. It does so by examining relationships between CRC members at a member organisational level, rather than at an individual researcher or program level, as previous studies have done. The article concludes by introducing testable governance attributes that have the potential to minimise transaction costs between participants in industry-academic collaboration and therefore foster long-term research collaborations.

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1. Introduction

There has been significant recent debate about the place of government-funded collaborative research in Australia. In particular, the ability of the flagship vehicle for collaborative applied research between the university sector and industry, namely the Australian Government's Cooperative Research Centre (CRC) Program, to deliver financially sustainable, long-term engagement between the two sectors has been questioned. Indeed, the CRC Program has been criticised in a number of official reports, such as the [Commission of Audit Report \(2014\)](#), the [Productivity Commission \(2007\)](#) and the [O'Kane \(2008\)](#) review. For example, the [Commission of Audit Report \(2014\)](#) claims that collaborative research does not appear to rank highly on the agenda of industry, with Australian businesses not necessarily seeing the lack of collaboration with academia as an impediment to innovation ([ABS, 2012](#)). These pessimistic thoughts would appear to have guided the Australian Government's recent decision to cut back the Program's budget by \$80 million. This move suggests that there is some doubt about

the CRC Program's ability to deliver what the Chief Scientist of Australia, Professor Ralph Slatyer, had in mind when he oversaw the Program's establishment in 1991, this being the creation of financially self-sufficient CRCs that, in time, would not require additional government funding ([O'Kane, 2008](#); [Allen Consulting Group, 2012](#)).

Numerous program reviews have demonstrated the broader economic benefits associated with the CRC Program (e.g. [Howard Partners, 2003](#); [O'Kane, 2008](#); [Allen Consulting Group, 2012](#)). It remains unclear, however, if the current CRC model is the most appropriate vehicle to achieve ongoing, financially sustainable collaborative relationships between industry and academia. In fact, [O'Kane \(2008, p. 54\)](#) observed that 'self-sufficiency has proven to be out of reach' and that 'there has been a potential for CRC energies to be diverted from the main game', which, of course, is the facilitation of interaction between universities and industry. The University of Queensland, in a submission to the National Innovation System (NIS) review in 2008, highlighted the alternative goal that a CRC's prime objective is survival as an organisation after the cessation of government funding, rather than the facilitation of interaction between universities and industry. Attempts at organisational survival rather than nurturing ongoing industry-university collaboration also adversely affect the Program's capacity to support innovation. This is because established CRCs crowd out new centres by re-bidding for CRC funding ([O'Kane, 2008](#)). From a

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national perspective, cross-sector specific grant funding such as the CRC Program, in addition to R&D tax concessions gained by businesses contributing to CRCs, may skew investment decisions by industries and only benefit the private sector, with 'the risk of providing support to projects with low potential spill-overs and those that would be undertaken in the absence of public subsidies' (Productivity Commission, 2007, p. 450).

In view of the above, a thorough investigation into the ability of the current CRC model to deliver longer-term collaboration between industry and academia is required. This, of course, is a problem that drives to the very core of contemporary debates relating to the role of universities in national science and technology (S&T) policy, the more so given that cross-sector collaborative research and development (R&D) has increasingly been promoted as a means to harness pre-competitive as well as mission-critical technologies by bringing together scientific and technical capacities (Boardman and Gray, 2010). Yet Australia's apparent underperformance in the intensity of collaboration between industry and universities, at least when compared to that of other developed countries (OECD, 2013), suggests that Australian businesses have been looking for research providers outside of academia, or have preferred in-house research to some extent. All this ostensibly suggests that the benefits of collaborative applied research to the entities engaging in the current CRC Program are not sufficient to cover the implicit costs to maintain ongoing relationships between academia and industry after the initial funding period has expired, at least without additional government funding. This article therefore aims to unpack the implicit costs associated with the CRC governance model using transaction cost theory (hereafter TCT). It also intends to propose a framework of broad structural prescriptions necessary for the development of genuinely sustainable research collaborations that do not rely unduly on government funding.

Of course, there are a number of studies addressing different aspects of the CRC Program on a policy as well as on an individual researcher level. For example, on a policy level, Turpin et al. (2011) provide a discussion of the genesis of the Program over time. On the individual level, studies focus on the benefits accruing to individual members of a CRC (Turpin and Garrett-Jones, 2010), industry participant experience (Couchman and Fulop, 2004), and effective incentive alignment (Garrett-Jones et al., 2005). However, to our knowledge, an organisational level of analysis has not yet been attempted. This study contributes two innovations to the literature on CRCs: (1) we peg our analysis at the CRC member organisational level, as opposed to the individual or Program level; and (2) we introduce governance attributes that would foster long-term ongoing research collaborations between industry and universities, with a particular focus on minimising transaction costs. In addition, the study makes a contribution to the research collaboration literature by extending on the policy-related lessons identified by Perkmann et al. (2013), p. 433, who suggest that 'policy should not implicitly assume that "more is better" but seek to differentiate the conditions under which engagement generates both academic and industrial benefits, so [sic] minimise the risk of failure.'

2. The Cooperative Research Centre (CRC) Program

Although it is difficult to pinpoint a single policy intent underpinning the foundation of the CRC Program, it is possible to position its beginning within a broader policy context. In 1982, the Australian national research centres program was launched with the objective to create linkages between university and industry, while, from the mid-1980s, university researchers were able for the first time to apply for industry-related research grants. These initiatives coincided with John Dawkins taking over the federal education

portfolio in 1987. One of his chief aims was to transform the Australian higher education sector so that it could be internationally competitive in a neo-liberal and increasingly globalised market setting, all the while allowing it to continue offering equitable and accessible education for Australian students.

Thus, the CRC Program was one of several measures that took place at the beginning of the era of mass education in Australia. In particular, the government of the day, driven by the then-popular economic rationalist agenda, aimed to direct research to meet national proprieties and to enable Australian universities to be internationally competitive with those of other OECD countries (Davey and Ware, 2009). In line with this, the Vice-Chancellors' Committee in 1988 called for an increase in collaborative research and stated that 'Industry must accept more responsibility for funding research projects and must recognise the value of funding R&D in Australia rather than buying technology from overseas' (Vice-Chancellors' Committee, 1988, p. 4). In addition, Dawkins identified a need 'to promote greater responsiveness within the university sector to both social and industrial needs' (Department of Employment, 1988, p. 90). In effect, the CRC Program was closely tied to a trend towards problem-oriented, cross-disciplinary research centres on an international scale, similar to program such as the United States' National Science Foundation Engineering Research Centres and the United Kingdom's Science and Engineering Research Council's Interdisciplinary Research Centres established in the mid-1980s (Turpin et al., 2011).

The Program's intent was to foster ongoing collaborative research between universities, government research agencies and industry partners (Davey and Ware, 2009), which is still reflected in the current CRC mission 'to undertake medium- to long-term industry-driven collaborative research' (CRC n.d.). According to Slatyer (1994), the CRC concept was designed to: (1) consolidate the disparate scientific and technological resources in Australia by creating a system of cross-sector collaborative research centres; (2) overcome the lack of large integrated research teams with targeting funding that allows members to retain separate institutional affiliation; (3) enhance the effective utilisation of research findings by involving research users and focusing on research areas that underpin existing or emerging sectors; and (4) ensure appropriate investment in future scientific and technological resources by an integrated educational program. Some of the Program-specific features include cash and in-kind contributions of CRC participants having to at least match the funds sought from the Program, and the establishment of an institution-independent intermediate management structure (Slatyer, 1994; Turpin et al., 2011).

The Program commenced by financing projects broadly affiliated with one of six industries (Manufacturing Technology, Information and Communication Technology, Mining and Energy, Agriculture and Rural-based Manufacturing, Environment; and Medical Science and Technology) with \$2 million p.a. from the Department, to be matched by an equivalent amount from university and industry partners for an initial 7 years, with a potential extension (Slatyer, 1994). By 2012, the Australian Government had committed more than \$3.4 billion to the Program. During the period 1991–2012, 190 CRCs were funded (Allen Consulting Group, 2012). Table 1 provides an overview of the contributions made over the period 1990–2006. The average size of the government investment in any CRC was \$21.5 million, while university and industry participants provided on average a total of \$6.6 million in cash and \$28.6 million in in-kind contributions (see Table 1).¹

¹ These estimates have been made based on funding data available from O'Kane (2008) for the period 1990 until 2006. Funding data was converted into constant Australian dollars.

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