



A framework for analysing bilateral research cooperation agreements relating to reciprocity

Deliverable 1.1: Analytical report on the reciprocity issues of bilateral cooperation agreements and existing bilateral/reciprocal cooperation

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EXECUTIVE SUMMARY

This paper proposes a method via which specific international research cooperation agreements can be analysed in regards to the nature and extent of reciprocity involved. The proposed analytical framework is based upon the familiar risk-reward relationship. This is used to develop a taxonomy of five different stages in the development of international research cooperation agreements: from simple scientific exchanges and visits (Stage 1) through to fully interoperable funding systems (Stage 5). The suggested framework is tested against EU-Australia S&T cooperation agreements and proves itself to be an effective means of categorising these agreements and of understanding the wider process of partnership-building that they facilitate. The overall utility of the proposed framework is to help policymakers to think more strategically about the range of long-term objectives that it is possible to achieve in international research cooperation, the risks and rewards involved in the different stages in the development of this cooperation, and as a result, help to establish attractive and feasible goals.

Preamble

This paper has been prepared as part of a set of interconnected projects which aim to raise awareness amongst European-based researchers of the funding opportunities that support collaboration with colleagues in a range of non-European nations. Projects with this focus, funded by the European Commission, are now underway in Australia, Brazil, Canada, China, India, Mexico, New Zealand, Russia, South Africa, South Korea, and the USA. These projects target both research and innovation support programmes. They are known collectively as ACCESS4EU projects.²

These moves to develop a more coordinated relationship between the European Union and a range of non-EU countries may point the way towards more effective multilateral coordination over these matters in the future.

The Australian project is led by the *International Bureau of the German Federal Ministry of Education and Research* and also involves the *Forum for European-Australian Science and Technology cooperation (FEAST)*, the *Commonwealth Scientific and Industrial Research Organisation (CSIRO)* and *The British Council*.

The various national projects are cooperating over the development of a standard database architecture that aims to make it easier to understand and compare different nations' research funding arrangements. The projects are also collecting and disseminating data on:

- access opportunities for European researchers in each country;
- the distinctive research and innovation strengths and capacities of third countries;
- current levels of European participation in third country programmes;
- current third country policies on international collaboration as it may affect European participation; and
- any obstacles to the participation of European researchers in third country programmes.

² Details of this collective initiative, which is known as ACCESS4EU, can be obtained from: <http://www.access4.eu/>.

Introduction

The purpose of this paper is to propose a method via which specific international research cooperation agreements can be analysed in regards to the nature and extent of reciprocity involved.

This is an important matter because levels of reciprocity in access to different nations' domestic research funding systems can be influenced by the overall diplomatic rationale/intent and the technical details of specific international research cooperation agreements. However, it is hard to assess these agreements without a suitable analytical framework developed for that purpose. As we are not aware of an existing analytical framework, it has been necessary to try to develop one.

The proposed analytical framework is based upon the familiar risk-reward relationship. This is used to develop a taxonomy of five different stages in the development of international research cooperation agreements: from simple scientific exchanges and visits (Stage 1) through to fully interoperable funding systems (Stage 5).

We believe that this framework has the potential to provide policy-makers with a useful frame of reference against which they can:

- assess where they currently stand as regards the international research cooperation agreements already in place with specific nations and national groups (notably the European Union);
- consider the potential risks and rewards associated with further enhancing specific international research cooperation agreements using this frame of reference; and
- develop priorities for managing and, if necessary, upgrading international research cooperation agreements by assessing the capacity of specific agreements within this broader risk-reward relationship.

Framework for Analysis

In seeking to develop a suitable framework we started by considering the ways in which specific international research cooperation agreements can be thought of from a risk-reward perspective. We also considered how cumulative experience in benefiting from the existence of these agreements might affect decisions over whether to further upgrade these cooperative arrangements – in effect created an 'experience curve'.

In this context, the experience curve (sometimes also referred to as a learning curve) is beneficial because it increases familiarity with managing the risks associated with international cooperation, in so doing leading to a more favourable risk-reward relationship (lower risks for a given level of reward) – the more you cooperate the more you get out of it. This has the advantage that in some circumstances the objective of targeted government funding should be to allow researchers to move along this risk-reducing experience curve to the risk 'tipping point'. This is the point at which collaboration becomes self-sustaining due to a favourable risk-reward ratio – in effect allowing governments to frame support for some types of international cooperation such as 'launch aid', see Matthews and Johnston (1999). Launch aid is an established rationale for government subsidies when significant experience curve-related conditions exist, such as in shipbuilding, power station construction and

aircraft fabrication – where the ‘first of a kind’ is characteristically far more expensive and time-consuming to produce than subsequent units.

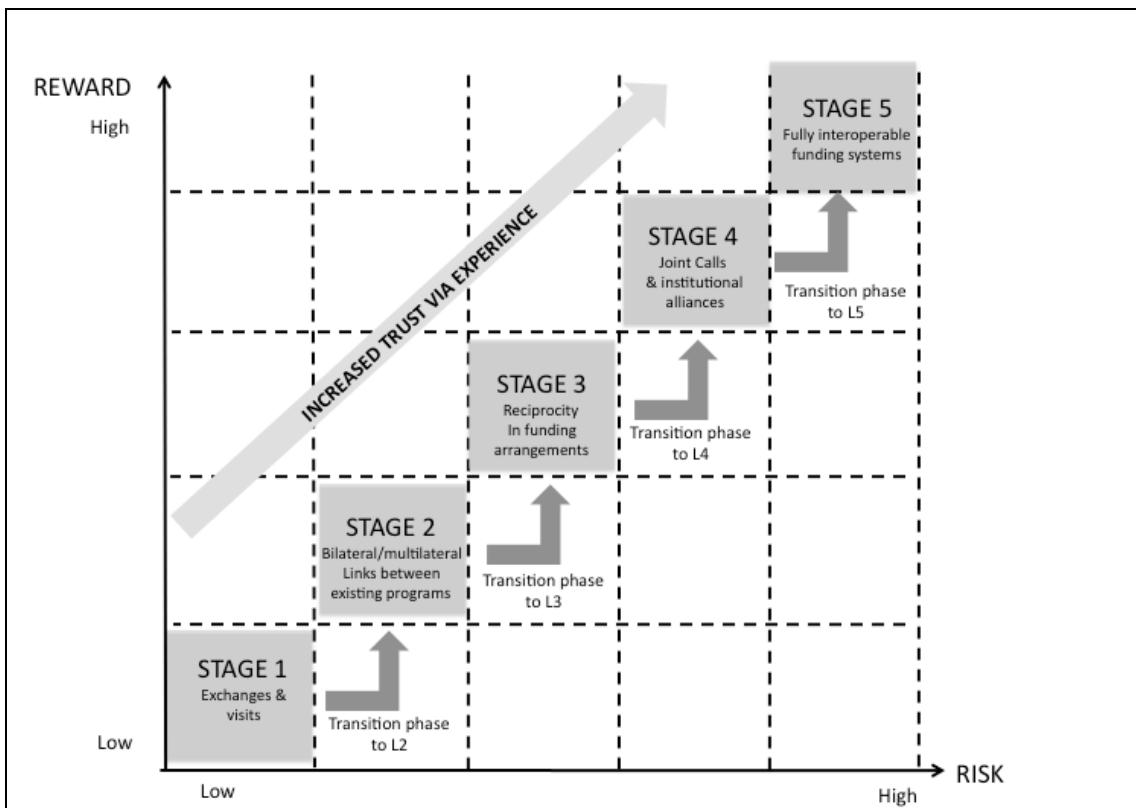
The following diagram lays out the suggested approach to assessing international research cooperation agreements. The horizontal axis assesses the level of risk and the vertical axis assesses the level of reward.

Five stages are identified, each of which involves managing higher levels of risk in order to seek greater rewards. These stages are:

- Stage 1: scientific exchanges and visits;
- Stage 2: bilateral/multilateral links between existing programmes;
- Stage 3: reciprocity in funding arrangements;
- Stage 4: joint calls (bilateral & multilateral) and institutional alliances using separate funding; and
- Stage 5: fully interoperable funding systems.

In each case, the risks faced increase with each stage because there is more to gain – but more to lose.

Figure 1: Stages in international research collaboration by risk/reward



Most of these risks relate to the combined impact of asymmetries in domestic research capability (intrinsic to research) and the more extrinsic risk factors associated with any international engagement (cultural, legal, geostrategic considerations etc). For example, the complex realities of navigating diverse governance and legislative arrangements and obtaining buy-in from all key stakeholders, obtaining access to

shared databases etc. These are all issues that can limit the ability to convert potential into realised gains.

In a similar manner to a free trade regime, the combined impact of these diverse factors is to increase a nations' exposure to the risk of failing to exploit the *potential* provided by greater openness and reciprocity and in so doing providing greater benefits to international cooperation partners than are achieved domestically.

We suggest that this provides a useful framework for policy-makers to assess where they currently stand and what they aspire to achieve in the future. This could be particularly useful in highlighting the ways in which specific agreements, in such a context, can be approached as a means to an end rather than an end in themselves.

Application of the Framework to Australia-EU Agreements

In order to apply the framework developed above, an analysis was carried out of the two bilateral cooperation agreements between Australia and the European Union that relate to cooperation in science and technology research. These are:

- *1999 Amended Agreement relating to Scientific and Technical Cooperation between Australian and the European Community* [original Agreement 1994]; and
- *Australia-European Union Partnership Framework* (2008, revised 2009)

We can observe that the assumption of the wording in both documents, as is to be expected in bilateral and multilateral instruments, is that each side assesses the proposed cooperation as having more or less equal risks and rewards; that the types and levels of cooperation envisaged are ones that each side, from past experience, already trusts the other to be able to engage in without undue risk to itself; and with prospect of rewards for raising the bar.

We examined the following two issues:

- What stage or stages of cooperation do these agreements reflect?
- Which subsequent stages in the Framework do they enable?

The older instrument is the Agreement, specific to Science and Technology cooperation, and a technical agreement. It contains evidence that the Stage of collaboration reached by 1994 was already moving into Stage 2 and the aspiration was to enable it to move higher, to Stages 3 and 4. Visits and exchanges are mentioned (Stage 1) but so also are the ability of persons and organisations of the one side to take part in the research projects of the other (a precursor of Stage 2). It also sets up the Joint Science and Technology Cooperation Committee (JSTCC) as a forum where issues relating to these matters can be pursued by officials of both sides, with decisions to be reached by consensus. This forum, which has met 11 times since 1994, can be seen within our Framework as a supra-programme linkage at policy level, acting as an enabler for the emergence of full Stage 2 and then later Stages of collaboration.

The Definitions included in Article 1 of the Agreement [1994, amended 1999], imply that a high level of reciprocal cooperation is aimed for, – e.g. that

“cooperative activity” includes joint research; that “joint research” is “implemented and/or funded by the joint contributions of the Parties and with collaboration from participants of both Parties...”.

This definition foreshadows both Stage 2 and Stage 3 collaboration.

The original Agreement included an article (4.2) restricting activity covered by the agreement to six specific fields. The main change in the Amended Agreement of 1999 is to remove that restriction so that the cooperation can take place under whatever fields of activity either side is currently engaged in. This freeing up of eligible fields of activity five years after the original agreement was concluded broadens the opportunities for both sides, and implies increasing degrees of trust in the rewards of cooperation.

The Annex to the Agreement deals with intellectual property, setting up a framework to enable cooperation in an area of high risk in international collaboration, and one of the hurdles to cross in moving to higher levels of cooperation.

The *Australian-European Union Partnership Framework* of 2008 is not a technical instrument, nor is it limited to science and technology cooperation, but sets out aspirations, objectives and actions across the Australia-EU relationship. Objective 5 of the Partnership Framework is “To strengthen cooperation in science, research, technology and innovation, education and culture and to facilitate the movement of people”, and its Rationale includes building on the Science and Technology Agreement “to create new opportunities for collaboration”.

While most of the existing activities and proposed actions listed in the document under Objective 5 fall into the Stage 1 and Stage 2 categories of our collaboration Framework, there are also signs of movement into Stages 3 and 4. For example the immediate Actions listed under Objective 5 include development of an agreement on twinning arrangements for research projects, initially in the area of food, agriculture and biotechnologies, to produce eventually a model for such cooperation in other areas. This would seem to be a Stage 3 and Stage 4 enabling strategy, and is built on recognizing from experience the requirements for deeper collaboration.

Concerns about visa policies as they affect the flow of people between the two sides are prominent in this section of the document, and constitute an area of impediment to all stages of collaboration, a policy area for both sides where risk-reward balance is decided by actors well outside of the framework of collaboration while impacting on it significantly.

Discussion and conclusions

The emphasis on the risk-reward relationship in the proposed framework for analysing reciprocity in bilateral S&T cooperation agreements aligns with the aspirational aspects of the EU-Australia cooperation agreements that currently exist. It also provides a method for situating specific agreements within a more general reciprocity and partnership-based diplomatic relationship.

From this perspective, the EU-Australia statements and agreements can be viewed as statements of intent to gradually move through the sorts of stages identified in the proposed framework. This process of incrementally strengthening reciprocal relationships reveals any impediments to enhanced research cooperation – impediments that require attention as this process evolves.

It is also evident that actual practices in strengthening reciprocity can precede formal treaties and agreements as regards different levels of cooperation. In such cases, treaties and agreements will tend to catch-up with rather than lead real practices.

Perhaps the most useful attribute of the proposed framework is the way in which it can clarify and inform desirable target thresholds for bilateral international research cooperation (either via formal treaties and agreements or actual practices ahead of these agreements). It is particularly important that pairs of nations, or national groupings, are clear as to the stages in enhanced cooperation that they eventually seek to attain – not least because any asymmetries in these aspirations could prove themselves to be problematic in the diplomatic domain.

Future work in this area could usefully unpack the intrinsic (to research capability) and the extrinsic cultural, legal and geostrategic considerations that shape the risks faced in seeking to achieve enhanced levels of international research cooperation.

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