

## A window on the European Commission

### RESEARCH: EU-Australia collaboration

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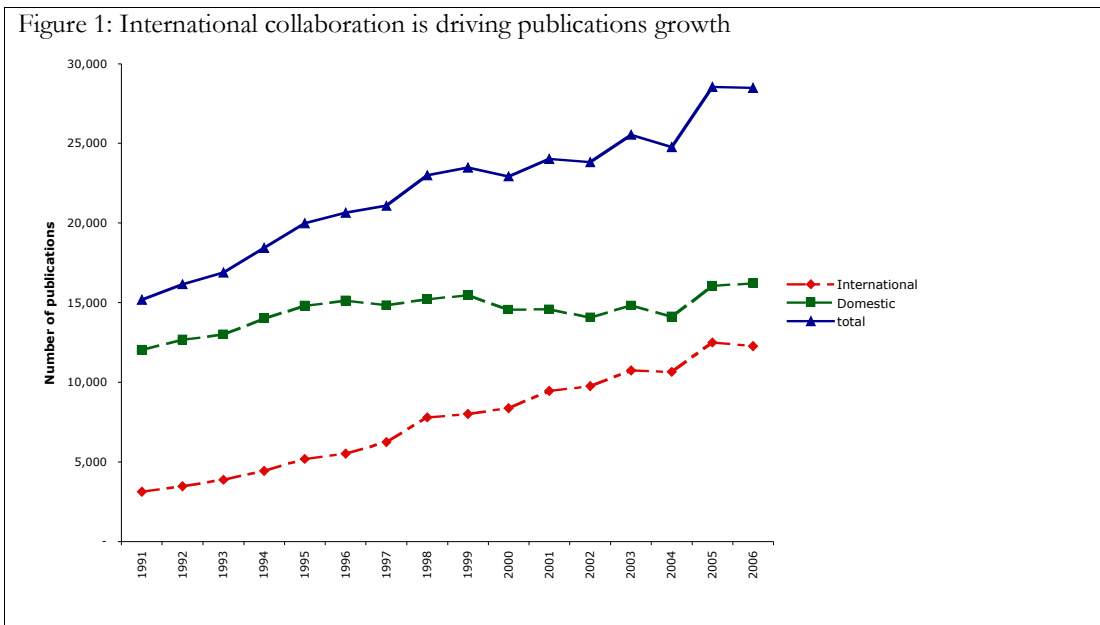
#### Reviewing Australia’s engagement in a global innovation system

In this article FEAST communicates findings obtained from wide-ranging consultations and discussions with the stakeholder groups including: government officials in Australia, officials in the Delegation of the European Commission to Australia and European Commission officials based in Brussels, officials in Australian embassies in Europe (particularly in the Australian Mission to the European Union, Brussels), European Embassies and High Commissions in Canberra, the Australian research and innovation community, the Australian research management community (particularly staff in university research offices), companies with a commercial interest in strengthening research and innovation cooperation between Australia and Europe. These consultations have been carried out over the last year as part of a programme of work focused on identifying and promulgating best practice strategies in research and innovation engagement between Europe and Australia. The article also draws upon some preliminary findings from bibliometric analyses of patterns and trends in international research collaboration involving Australia-based researchers.

#### Key trends in Australia’s international collaborative landscape

Bibliometric analysis suggests that most of the growth in Australia’s research publications is associated with international collaboration rather than purely domestic efforts. FEAST has examined this issue with regard to those academic publications that are tracked adequately by Thomson publications data.<sup>15</sup> The output of purely domestic papers is growing by around 200 per year whereas papers with international authors are growing by roughly 600 per year, i.e. three-quarters of the growth in publications output is associated with international collaboration. This trend is illustrated in the following graph.

Figure 1: International collaboration is driving publications growth

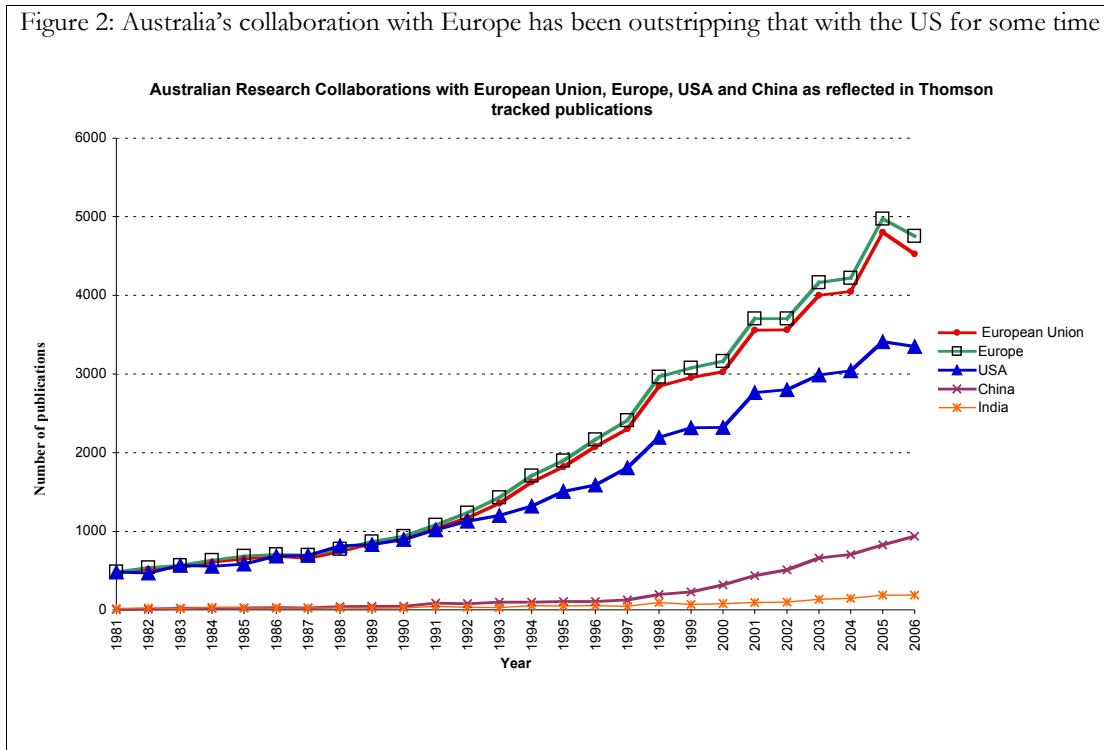


Source: Thomson data provided to FEAST by the ANU’s Research Evaluation and Policy Project.

Europe is Australia’s major research partner, a trend that the following graph illustrates. According to this dataset, the early 1990s marked a point of divergence between Australia’s research collaboration with Europe and the United States. The number of collaborative publications with European researchers has grown faster than the number with US collaborators. Not surprisingly, the number of collaborative publications with China has been increasing since 1997, far more than that with India.

<sup>15</sup> Thomson is a key data source used to assess research performance, however it suffers from the important limitation that the humanities and social sciences are not covered effectively.

Figure 2: Australia's collaboration with Europe has been outstripping that with the US for some time



Source: Thomson data provided to FEAST by the ANU's Research Evaluation and Policy Project. Note that the dip in 2006 is simply due to lags in capturing publications.

There are several factors responsible for these trends. International research collaborating is broadening geographically (we are collaborating with more countries) as well as deepening (we are intensifying our collaboration with particular countries in specific fields of research). FEAST will be carrying out more detailed analyses of these trends over the next two months, including an examination of the impact on citation rates.<sup>16</sup> What is clear at this (preliminary) stage is that research engagement with Europe is of major, and growing, significance to Australia.

### Achieving stronger international engagement

FEAST has been examining researchers' experiences in collaborating in Sixth Framework Programme (FP6) projects. Our consultations to date have covered 47 FP6 projects, which amounts to nearly half of the formal Australian participation in FP6. Significantly, Australian researchers have, in the main, welcomed this initiative because they fully appreciate the importance of providing the European and Australian science and innovation policy communities with better information on how best to intensify research collaboration.

#### *The traditional paradigm*

The established wisdom for many researchers and policy-makers has been to view international research collaboration as a complementary but auxiliary activity to core research. That approach lent itself to searching for targeted funding to support international research collaboration.

In this approach it is extremely difficult for the supply for funding for international engagement to match the demand for it, and as a result the size of the "deal flow" in international research cooperation tends to be limited by the availability of targeted funding. There is also a tendency for some researchers to view international cooperation as a means of supporting research projects that they have been unable to fund via domestic sources. This leads them to seek to engage internationally from a position of weakness rather than strength. Proposal submission synchronisation can be an additional problem faced when targeted funding for international engagement is relied upon.

In this established perspective the risks faced when attempting to make international collaboration happen can be rather high. Considerable time, and resources, can be consumed attempting to secure special funding for international collaboration yet the probability of success is low compared with efforts to secure purely

<sup>16</sup> These findings will be made available to the Review on request.

domestic research funding. This risk reduces the attraction of international collaboration and, arguably, is a matter of concern given the importance of bringing together complementary research capabilities that reside in different nations.

*The emerging paradigm*

The emerging paradigm is significantly different. It reflects growing awareness of the fact that the most highly cited research work tends to be associated with international research teams and therefore treats international collaboration as part of the “core business” of doing cutting-edge research. Those teams with sufficient critical mass, as can be found for example in a centre of excellence, build sustainable collaborative relationships as a key part of their core projects – not as an optional extra. This approach involves doing things like exchanging post-docs and PhD students and arranging regular networking of researchers to pool their insights and jointly interpret findings. Travel costs are born by a centre, or smaller team, as part of its core business.

The risks faced in working in this way are far lower because the challenge of trying to secure (limited) additional funding for international collaboration is greatly reduced. Indeed, the reciprocity involved in exchanging staff and students means that there can be a very high level of collaborative activity relative to any international flows of funding. Provided that the transaction costs involved in international research cooperation (i.e. travel funding) are covered teams can swap people with relative ease.

Of course, it can be very difficult for the policy community to track this “endogenous” international research collaboration precisely because it is central to “core” research efforts. This is why so little data are available on the real nature and extent of research collaboration between Australia and Europe. It is easiest to track the collaboration linked to targeted funding, although this is only the tip of the iceberg. It is not hard to see that adopting this more “self-reliant” approach allows the size of the international research collaboration deal flow to grow in response to the demand for such collaboration without the constraint imposed by the limited availability of targeted funding.

Of course, any tendency for national funding bodies and research councils to cut requested travel funding when awarding research grants does tend to limit the effectiveness of this self-reliant approach – particularly if it is hard to raise funds for travel from other sources.

From this perspective, the rules and regulations surrounding research funding that restrict scope for international collaboration are the key impediment preventing researchers from building the collaborative relationships that they want to build. A more permissive approach to research funding would allow international collaborative relationships to be configured “bottom up” in line with researchers’ collective aims.

Consequently, Minister Carr’s recent announcement that the Australian Research Council will now be adopting a far more internationally engaged approach, involving a move toward truly global competition for funding for research to be performed in Australia, is therefore extremely welcome and commendable in its clarity of purpose. This aligns Australia with international trends in research policy – for example the new European Research Council (ERC) adopts a similar approach.

The overall result of these international trends will be that research will become more “borderless” and better able to exploit synergies and to avoid wasteful duplication. We are moving toward a global knowledge commons in which the nationality and geographical location of researchers will matter much less than the webs of global relationships in which these researchers are embedded.

Indeed, it is these webs of often complex relationships that will increasingly constitute the critical intangible “asset”, from which public policy will seek to obtain a social, environmental and economic pay-off. It is not hard to see that understanding and tracing the outcomes from spending on research and innovation is set to become far less about the direct benefits arising for a nation and region/city and more about the ways in which each nation, region and city performs research as part of a wider network that contributes to global advances. These global advances are then drawn upon in a more “customised” manner to address specific national, regional and indeed city-based challenges and opportunities. Both research advances and innovation in business (and the public sector) tend to be achieved via interactive social networks. If we overlook the importance of the international webs of social interactions and information flows that are central to creativity and progress we distort our understanding of how research progress and innovation takes place.

This has important implications for how we go about both appraising potential research projects and evaluating the progress and outcomes that past projects have generated. Policy-makers must stop searching for the holy grail of easily traced “smoking gun” audit trails that link research to useful outcomes via simple causal chains. They must learn to accept that research generates useful outcomes by a process that often cannot be traced in a simple manner precisely because a complex, but far more powerful, system of cause and affect is at work on a global scale.

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