Policy Note
How research universities help business

Key Messages

Research universities serve Australia, and business in particular, by:
• supplying a continuing flow of graduates and postgraduates, including researchers, having knowledge about the latest developments in their fields of study and able to apply this in the specific circumstances of their employment;
• producing new knowledge and technology of value to business, government and the general community, as well as a set of research and other capabilities these sectors can draw on as they need; and
• attracting talent from overseas, both staff and students, who are able to add to Australia’s intellectual capital. They help enhance the international reputation of Australia and its universities in ways that make it easier for Australia to operate at the global level in matters relevant to business and government.

At a time when separate but related announcements are starting to suggest that Australia’s economy is undergoing an unprecedented rate of structural adjustment, it is important to start thinking about the performance and effectiveness of those institutions that will help create our future. Government and business will both play an important role in determining Australia’s development trajectory but both depend to an often unappreciated extent on the higher education system. For this reason it is essential to understand the role that research universities play in economic development, to explore how these universities connect to business and to develop some creative ways to improve the effectiveness of existing linkages between the sectors and to create new ones.

This paper provides an outline of the most important ways in which universities support business, assist economic development more generally and help create a resilient society able to respond flexibly and positively to the contingencies of economic and other changes.

An educated population

There is no doubt that Australia’s future will depend increasingly on the creativity and business acumen of its people. Internationalisation is leading to a geographical segregation of business activity with increasing specialisation between countries. Australia will need to depend more on high-value-added activities that depend on the creation and imaginative use of intellectual property as well as the inspired development of new business models. Even within these sectors, continuing innovation will be necessary to maintain competitiveness as other countries strive to catch up.

Universities provide the continuing supply of graduates who take up positions in business. In moving from universities to business, graduates carry with them the knowledge, skills, expertise and awareness of modern technologies and thinking they developed through their university education. Graduates are aware of the most recent developments in their disciplines, and of the relevance of these advances, because university research activities inform their teaching. In addition, university education builds broader skills and competencies such as critical thinking, effective communication and cultural awareness that underlie much modern business.

Graduate recruitment provides access to the latest research and in itself can provide informal links to university staff. This is important because the empirical evidence suggests that the major factor limiting business innovation is the lack of creative people and people having the necessary skills and expertise, not access to information and research.
The production of knowledge and researchers
Universities are an essential component of Australia's research system. University research produces new knowledge, new technologies and new researchers. Many of these new researchers move on to work in the business, government or non-profit sectors after completing their PhD or after subsequent postdoctoral experience in academia.

University research serves the needs of government and the community, as well as business. Moreover, publicly funded university research complements business research but does not duplicate it. Much university research creates the understanding and technological opportunities that individual firms can draw upon to develop their own products or services. University research also extends beyond the boundaries of business research in addressing generic issues vital to business operations such as trade issues, human behaviour, economics, international law, or intellectual property. This kind of research can inform policy development and Australia's standing in international discussions and help create an environment favourable to Australian trade and commerce.

The research performed by universities is readily available because academics publish in journals that researchers in business access and read. Academics also present at conferences that business people attend and make information available through web sites, newsletters and many other means.

A storehouse of capabilities
University research is important in its own right but also creates a breadth and depth of national research capabilities which far exceeds that found in business, even though business expenditure on research exceeds that of the higher education sector. Business research tends to focus on very specific areas of immediate concern. The breadth of university research capability (covering both expertise, specialised equipment and university networks with overseas researchers) provides an essential resource that business and government can draw upon as they need. Business can use these capabilities by seeking advice, through consultancies, research contracts, cooperative ventures (including Cooperative Research Centres or CRCs) and many other mechanisms, including board appointments.

The availability of university research capabilities is especially important in Australia where the small size of many firms means that most do not have ongoing research programs but stop and start their research as the need arises.

Attraction of foreign talent
Australia is a small country and the best people are usually elsewhere. If it is to become more competitive internationally, Australia needs to attract them. It is instructive to note that foreign-born entrepreneurs started a quarter of U.S. technology start-ups over the past six years. Over 40 per cent of the engineering and technology ventures in Silicon had at least one immigrant as their founder. Moreover, as of 2010, one-third of the 314 laureates who won their Nobel Prizes while working in the United States were foreign-born.

Australian research universities which have an international reputation are able to attract the best and most talented people from wherever they are. This applies not just to academic staff and researchers but to students. Educating students from overseas has many cultural and international networking benefits, as well as being a multibillion-dollar export industry in its own right. Just as important is that some of the most talented undergraduate and research students might stay and work in Australia. Even when they do not, their links with Australia can have valuable personal, diplomatic and commercial benefits.

International reputation
Capital is more internationally mobile than ever and international reputation will always play an important part in the investment decisions made by major businesses and even individual investors. While the government plays an essential role in creating the investment environment and in ensuring competitive settings in areas such as sovereign risk or tax structures, many multinational enterprises (MNEs) take specific note of the reputation and capabilities of a country's universities and the implications this has for the supply of skilled labour, research expertise and facilities, and international networks. This reputation is important to government as university research often provides the credibility necessary to play an effective role in international negotiations on matters as diverse as fisheries management, climate change and international tax regimes.
Conclusion

Australia’s research universities support business in many different ways but these are not independent of each other. Moreover, these avenues of support all depend, to one degree or another, on the universities having a culture of excellence through all of their activities. In particular, the excellence of the research performed by a university feeds directly into all of its other activities and has a huge impact on the level and quality of support a university provides to the business community.

The Group of Eight (Go8) universities provide a good example of this. As shown by the various international rankings, they receive global recognition as world-class institutions based on the quality of the research they produce. They are also the preferred research universities for businesses wishing to commission research from universities or to make use of the technologies that the universities have developed through their own research efforts. Excellence in academic research creates the breadth of knowledge, expertise and capabilities that industry can draw upon to meet its own specific research requirements.

One measure of this is that in 2011 the Go8 universities (which together make up 20% of Australia’s universities) received 68% of the total research income received by all universities, 74% of the total competitive grants funding that supports academic research and 66% of total ‘industry and other’ research funding.

This funding led to significant technology transfer activity and other business outcomes. For example, the Knowledge Commercialisation Australasia (KCA) Commercialisation Metrics Survey Report 2010 provides aggregated data for Australian public sector research organisations, including 21 member universities, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Australian Nuclear Science and Technology Organisation (ANSTO) which together represent the overwhelming majority of public sector research nationally. This report shows that the Go8 universities together accounted for 71% of invention disclosures, 70% of the Licensed/Options/Assignments executed, 95% of Licensed/Options/Assignments income, 67% of the start-up companies formed during the year and 65% (by value) of the contracts and consultancies entered into over the year.

While these data are impressive, it is important to remember that these direct commercial activities together represent only a very small proportion of the benefits that these universities are providing to business, even though they might be some of the easiest to quantify.