

Executive summary

Public research in universities and public research institutions (PRIs) are the source of many of today's technological innovations from recombinant DNA technology, the Global Positioning System (GPS) and the MP3 technology to Apple's Siri voice recognition technology. But recent data on the number of patents, licenses and companies created at universities and PRIs show a general slowdown since the late 2000s. This has raised concern among policy makers and practitioners about the effectiveness of commercialisation policies and mainstream technology transfer practices at universities and PRIs. This has in turn generated interest in new approaches to turn science into business as well as in new indicators for measuring the two-ways flows of knowledge and technology between public research and business.

Between 2001 and 2005, the average annual growth rate in patent applications by universities fell from 11.8% to 1.3% between 2006 and 2010. PRIs even experienced a negative growth of -1.3% over the latter period, compared to 5.3% growth between 2001 and 2005. Data on invention disclosures, that is, the first official recording of an academic invention – measured per USD 100 million in research expenditures show a slight drop on average from 2004-07 to 2008-11. University spin-offs have not significantly expanded either, despite continued policy support; in the United States, the number of spin-offs per university per year among 157 universities is low, averaging four. Data on spin-off companies formed per USD 100 million in research expenditures show on average a low in 2008 in major OECD countries, while the ratio stabilised in 2009-11 to pre-2008 levels. On the other hand, licensing income has remained relatively stable in OECD countries; however, only a small number of universities account for the bulk of total licensing income. In Europe, 10% of universities accounted for approximately 85% of total licensing income.

While patents, licenses and spin-offs remain important channels for commercialising public research, other channels such as collaborative research, (e.g. public-private partnerships), student and faculty mobility as well as contract research and faculty consulting appear to be increasing in importance. Student entrepreneurship has emerged as a focus of efforts to promote knowledge transfer and commercialisation.

Technological progress in ICTs combined with greater openness in public research and business innovation are also broadening the channels for commercialisation. A key driver is the push by science funding agencies for greater access to publicly funding research results and data.

Technology licensing and transfer offices (TTOs), which have long been central to university and government efforts to commercialise research, are also evolving in the search for more effective operational models. Many universities have sought to reform TTOs or to create new models such as regional hub-and-spoke TTOs that service multiple research institutions. In additions, some universities are also exploring new approaches to IP ownership by vesting some rights with the academic inventor while maintaining university ownership.

New approaches to financing commercialisation are also emerging. Many universities and PRIs are complementing government funding for university start-ups by setting up their own proof-of-concept (PoC) and seed funds. Examples include the Chalmers

Innovation Seed Fund, the Gemma Frisius Fonds KU Leuven and the Imperial Innovation Fund. Additional sources of finance such as IP collateral-based funding, corporate venturing activities and crowd funding for research are also boosting finance for research and commercialisation activities.

A key message from this report is that national policies and strategies for the commercialisation of public research should be strengthened not only with regard to patenting and licensing efforts but especially towards emerging channels like student entrepreneurship. Governments, research ministries and business must work more closely together to develop a more coherent set of policies for commercialisation and avoid overlap or duplication. Policies and incentives for the transfer of knowledge commercialisation should not be limited to patents and licensing from technological inventions; advances in the social sciences and humanities also contribute to innovation.



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