**Canadian innovation needs to marry invention with commercialization**

Neil Desai-Contributed to The Globe and Mail-Published June 6, 2019 Updated June 7, 2019

Neil Desai is an executive with Magnet Forensics, a Canadian technology company. He is a fellow with the Munk School of Global Affairs at the University of Toronto. There has been a Canadian consensus on the merits of foreign direct investment (FDI) for decades that cuts across sectors and partisan lines. In our traditional industries, it makes perfect sense. When foreign investors put up a hotel or finance resource development, there are obvious positive economic spillovers to the benefit of Canadians.

However, as the driver of wealth creation in the global economy shifts from tangible assets such as infrastructure to intangible assets such as algorithms, data sets and software-as-services, the national benefits of FDI into the domestic tech sector become opaque. There are two foundational areas of global competition in the intangibles economy: talent and ideas. They are deeply intertwined. Foreign multinational tech behemoths such as Google and [Amazon have been known to jurisdiction shop](https://www.theglobeandmail.com/report-on-business/rob-commentary/canada-should-build-the-next-amazon-not-lure-one/article36436202/) to find top talent at universities, largely engineers and data scientists, to drive their current commercialization and to generate new ideas to be commercialized. When such ideas and talent exist in a corporate structure, they often conduct early acquisitions, referred to as “acquihires,” regardless of the economic fundamentals of such companies.

The talent and their ideas are portable with little tax or other implication. More precisely, an algorithm developed in Waterloo, Ont., can be transferred, intrafirm, to another jurisdiction, say California, to be commercialized by the parent company without oversight, despite the public investments in the creation of those assets.

This can create negative economic spillovers for a country such as Canada that subsidizes key services such as education and health care in addition to the incentives it offers for companies to conduct research and development and to create jobs. It’s important to note that Canada has negative unemployment among data and computer scientists. Such incentives create wage inflation for Canadian firms that require such talent for their growth, as well as creating non-technical jobs such as sales and marketing, administration and operations roles.

This is not a theoretical argument. Canadians have been at the forefront of the development of the base artificial-intelligence (AI) algorithms at our universities. This has created much hype about Canada leading the global AI revolution.

This is true at the ideation phase, but when we look to who ultimately owns such ideas and can extract significant rents from them, look no further than the largest foreign multinational firms, which have acquired the intellectual property (IP) in exchange for what seems to be research funding to a university or a job for the faculty member.

This is the case with Geoffrey Hinton’s groundbreaking AI research, often associated with the University of Toronto, which has been [patented by Google](https://can01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fpatft.uspto.gov%2Fnetacgi%2Fnph-Parser%3FSect1%3DPTO2%26Sect2%3DHITOFF%26p%3D1%26u%3D%252Fnetahtml%252FPTO%252Fsearch-bool.html%26r%3D1%26f%3DG%26l%3D50%26co1%3DAND%26d%3DPTXT%26s1%3D10289962.PN.%26OS%3DPN%2F10289962%26RS%3DPN%2F10289962&data=02%7C01%7CSEfron%40globeandmail.com%7C1ac6799d6cfe4706ae5308d6e8fc5e44%7C44376110425e46ab942e26c9518bfd03%7C1%7C1%7C636952567957959382&sdata=EJ%2BLRC06oKlZ8EFpuwYLnknbe0qZwGC5nzgJFcYHzDc%3D&reserved=0). Such foundational technologies can generate billions of dollars of revenue both for the company and jurisdiction where it is commercialized. In 2017, Eric Schmidt, chairman of Google’s parent company, speaking about Canadian research into AI, [stated](https://www.theglobeandmail.com/technology/tech-news/alphabet-chair-praises-canadas-ai-innovations-at-googles-go-north/article36819918/): “We now use it throughout our entire business and it’s a major driver of our corporate success.” The company’s revenue in 2017 was US$110-billion. Google is not alone, as South Korean giant [LG recently announced an AI research partnership with the University of Toronto](https://can01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fmobilesyrup.com%2F2019%2F05%2F22%2Flg-university-of-toronto-ai-research-partnership%2F&data=02%7C01%7CSEfron%40globeandmail.com%7C1ac6799d6cfe4706ae5308d6e8fc5e44%7C44376110425e46ab942e26c9518bfd03%7C1%7C1%7C636952567957964374&sdata=vdxDfCy23pQ9Vnr2HmgvM0wm8hK7JVypHVadd2j9n%2Bo%3D&reserved=0). Universities are becoming ever more important in the intangible economy given that they sit at the nexus of talent development and ideation. In Canada, universities seem to be striking partnerships with foreign multinational tech companies at an increasing rate across the tech spectrum.

For example, Canadian researchers are among the pack in the race to 5G wireless technology, which is seen as another transformational platform technology. The government of Canada announced it would spend $40-million to lure Finnish company, Nokia, to conduct research on 5G. The government’s approach doesn’t seem to prescribe Canadian commercialization provisions, IP ownership or a royalty structure in exchange for the investment. This will create negative economic spillovers if the technology is commercially successful.

Beyond the economic spillovers, there are also national-security considerations of such research partnerships. Given that such foundational technologies are developed at universities, governance of such research partnerships should be a primary consideration for administrators and funders.

However, [a Globe and Mail investigation](https://www.theglobeandmail.com/politics/article-federal-research-funding-agency-screening-out-strong-political/) revealed that federal agency Natural Sciences and Engineering Research Council of Canada was looking for academic reviewers of a pending 5G research partnership between Canadian universities and Huawei, the Chinese technology giant, while not letting geopolitical considerations come in to their evaluation. This is despite the fact that the Canadian government is considering blocking the company from our telecommunications infrastructure supply chain. Leading U.S. research institutions such as the Massachusetts Institute of Technology have cut off Huawei from research partnerships.

Considering the economic spillovers of FDI into our innovation economy, asking for shrewder terms in exchange for publicly funded research partnerships with foreign companies or the consideration of geopolitical realities before striking such agreements is not economic nationalism. It’s a pillar of a modern prosperity strategy and enlightened sovereignty.

Canadians, whether they ever step foot on a university campus, fuel research partnerships through their taxes. We’re publicly funding research at [one of the highest rates among member countries of the Organization for Economic Co-operation and Development,](https://www.conferenceboard.ca/hcp/provincial/innovation/perd.aspx?AspxAutoDetectCookieSupport=1) yet our [productivity has plummeted compared with our competitors](https://www.brookings.edu/wp-content/uploads/2018/06/Canadas-Advanced-Industries_18-06-05_FINAL2.pdf).

We deserve for those investments to create a virtuous feedback loop. One which sees a return on the public investments we make, including some Canadian companies growing to globally competitive scale through intellectual property created and commercialized in Canada that creates quality technical and non-technical jobs, significant tax revenues to fund our health care, education and other essential services as well as new philanthropic resources. If we don’t awaken to these realities and act soon, Canada will have subsidized our own digital colonization.