

Improving Basic Research and Intellectual Property/Technology Transfer Funding to Address Stalling Economic Productivity

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Introduction

⚙️ Canada's economic productivity is declining relative to other developed economies such as the USA.

🔬 Economic performance and research spending are closely linked.

💰 Canada's R&D spending as a percentage of its gross domestic product (GDP) is low compared to its peers.

Canada needs to improve intellectual property

💡 production, and

🔒 protection and maintenance within Canada.



Canada's Stalling Productivity

- Productivity: a measure of goods and services outputs per units of inputs such as labour, capital, and raw materials.

“Compared to the United States, Canadian productivity has diminished by nine percent between 2000 and 2022, falling to roughly 72 percent of that of the U.S.”
(Cross, 2023)

Increasing productivity increases GDP, and therefore a nation's capacity to support more research.

Cross, B. (2023). *Canada's lagging productivity will take years to remedy*. The Conversation.

<https://www.queensu.ca/gazette/stories/canada-s-lagging-productivity-affects-us-all-and-will-take-years-remedy>



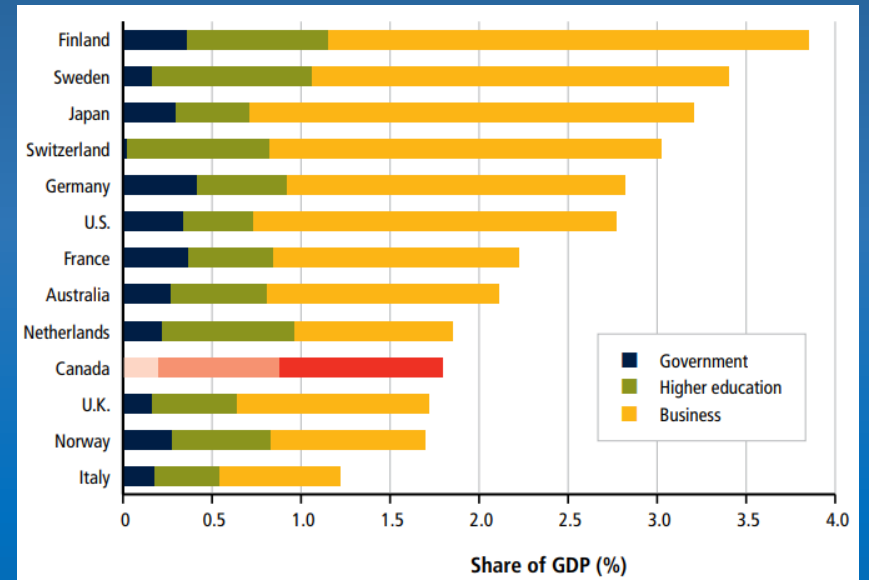
The Research and Productivity Link

- The IMF associates R&D spending with economic performance: “a 10 percent permanent increase in the stock of a country’s own basic research can increase productivity by 0.3 percent” (Barrett et al., 2021).
- “...hybrid policy that doubles subsidies to private research (basic and applied alike) and boosts public research expenditure by a third could increase productivity growth in advanced economies by 0.2 percentage point a year.”

Barrett, P., et al. (2021). *Why Basic Science Matters for Economic Growth*. IMF Blog.
imf.org/en/Blogs/Articles/2021/10/06/blog-ch3-weo-why-basic-science-matters-for-economic-growth

\$ R&D Spending and GDP

- The BAD news:
 - Canada's 2019 R&D expenditure, as a % of GDP, was ~½ that of the USA and industry R&D was the lowest in the G7 (SCOR, 2022).
 - It is also low compared to OECD peers and the shortfall has disproportionately been in the industrial R&D area (CCA, 2013).



Canada is less able to grow domestic businesses, compete for investment, and therefore, invest in future research because of its low total R&D spend.

- Standing Committee on Science and Research (SCOR) (2022), Successes, Challenges and Opportunities for Science in Canada, 44th Parliament, 1st session.
<https://www.ourcommons.ca/Content/Committee/441/SRSR/Reports/RP11841016/srsrrp01/srsrrp01-e.pdf>
- The Expert Panel on Industrial R&D in Canada, Council of Canadian Academies (CCA) (2013). The State of Industrial R&D in Canada.

\$ R&D Spending and GDP

- The GOOD news:
 - “Advances in basic research and experimental development are mutually supportive” (CCA, 2018)
 - Although the Federal government remains short on the Naylor report’s targets (Owens, 2022), it has made increased investments in basic research.
 - “Academia-business linkages appear relatively robust” (CCA, 2018)
- Expert Panel on the State of Science and Technology and Industrial Research and Development in Canada, Council of Canadian Academies (CCA), 2018. Competing in a Global Innovation Economy: The Current State of R&D in Canada.
https://cca-reports.ca/wp-content/uploads/2018/09/Competing_in_a_Global_Innovation_Economy_ExecSumm_EN.pdf
- Owens, B. (2022). *Taking stock of the Naylor report, 5 years on*. University Affairs.
<https://www.universityaffairs.ca/features/feature-article/taking-stock-of-the-naylor-report-5-years-on/>

\$ R&D Spending and GDP

- The opportunities:
 - “...hybrid policy that doubles subsidies to private research (basic and applied alike) and boosts public research expenditure by a third could increase productivity growth in advanced economies by 0.2 percentage point a year.” (Barrett 2021)
 - There are advantages to publicly funded industrial research: “...public funding partners (for industrial R&D) increase both the impact and generality of privately produced patents,” (Rathje, J., & Katila, R., 2018).
 - Basic research funding should still be improved, to meet at least the levels recommended by the Naylor report. This will provide more fundamental knowledge and help to provide more skilled graduates with research skills to industry.

Rathje, J., & Katila, R. (2018). *Outcomes from institutional interaction: Does government funding help firm innovation*. Academy of Management Proceedings (Vol. 1, p. 44). Briarcliff Manor, NY 10510: Academy of Management.



Intellectual Property Production

- “Canada had the lowest number of resident patent applications per million inhabitants in the Group of Seven (G7) in 2021” (SSCBCE, 2023)
- “Most witnesses recommended increasing public funds in order to mitigate the risk of technology transfer activities.” Proposals include:
 - “commercialization coupons” for Tri-Council funded researchers for technology transfer activities,
 - requiring universities to direct X% of public funding to technology transfer,
 - reinstating the IP Mobilization program and extending it to all Tri-Council agencies,
 - and funding twice what universities earn in IP revenues
- Report of the Standing Senate Committee on Banking, Commerce and the Economy (SSCBCE) (2023), “Needed: An Innovation Strategy for the Data-Driven Economy. sencanada.ca/content/sen/committee/441/BANC/Reports/Needed-Innov-Strat-Data-DrivenEcon_e.pdf
- Standing Committee on Industry, Science and Technology (SCIST) (2017), Intellectual Property and Technology Transfer: Promoting Best Practices, 42nd Parliament, 1st session. ourcommons.ca/documentviewer/en/42-1/INDU/report-8/page-30#2

IP Protection/Maintenance In Canada

- “More patents are now invented in Canada than are owned in Canada” (CCA, 2018)
- “More than half of all industry IP that comes out of Canadian universities is assigned to foreign companies.” (SSCBCE, 2023)
- “We invest in science and research and developing ideas that have significant commercial potential, and then we either squander them or give them away.” (SCOR, 2022)
- In budget 2022 the government announced an investment of \$96.6 million over five years starting in 2022-2023 and \$22.9 million ongoing in a series of initiatives to strengthen Canada’s intellectual property regime. (SCOR, 2022)

Thanks for listening/reading and
feel free to get in touch

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