
RELEASED
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2018
Executive Summary
xxi
Figure 3
Composite Score by Research Field in Canada, 2009–2014
Data Source: Panel calculations based on data provided by Science-Metrix using
COMPETING IN A GLOBAL INNOVATION ECONOMY:
THE CURRENT STATE OF R&D IN CANADA
Expert Panel on the State of Science and Technology and Industrial Research and Development in Canada
Council of Canadian Academies
Conseil des académies canadiennes
Science Advice in the Public Interest
Competing in a Global Innovation
Subfields by SI and ARC Score by Province/Regio
Province
Top Five Subfields by SI Score
Data Source: Calculated by Science-Metrix using Scopus database (Elsevier)
concentrated in cities, particularly Toronto, Montréal,
algary. These five cities create patents and high-tech
the rate of other cities. They also account for half
s sector (e.g., ICT, finance) and many clusters in
Many R&D clusters in Canada relate to natural
areas of economic and research strength. Natural
d around the location of resources, such as forestry
as in Alberta, agriculture in Ontario, mining in
es in Atlantic Canada. The automotive, plastics,
st individual clusters because of these industries'

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OVERVIEW OF THE CCA EXPERT PANEL ON THE STATE OF S&T AND INDUSTRIAL R&D

DAVID A. WOLFE, CO-DIRECTOR
INNOVATION POLICY LAB
MUNK SCHOOL OF GLOBAL AFFAIRS AND PUBLIC POLICY
UNIVERSITY OF TORONTO

June 14, 2019

10+ YEARS OF CCA ASSESSMENTS ON SCIENCE, TECHNOLOGY, INDUSTRIAL RESEARCH

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THE BOTTOM LINE

Canada has deep pools of research talent and remains a leading global contributor to research… but **other countries are now outpacing Canada in R&D investment**, ultimately putting the country's prosperity at risk.

In addition, **much of Canada's investment and talent in R&D and in innovation is being capitalized upon by others**, leading to a loss of economic and commercial benefits to Canadians.

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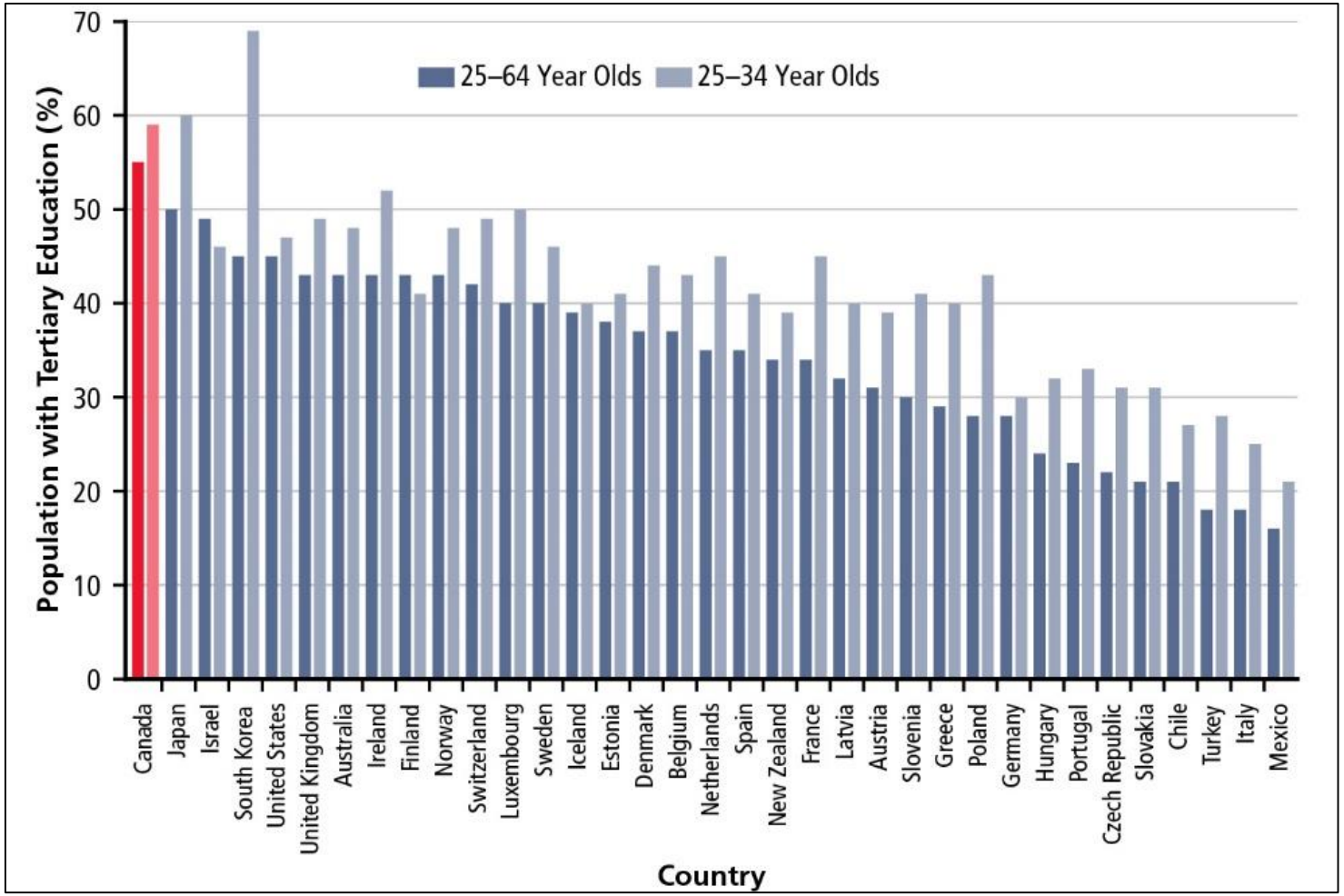
“CANADA HAS DEEP POOLS OF RESEARCH TALENT…”

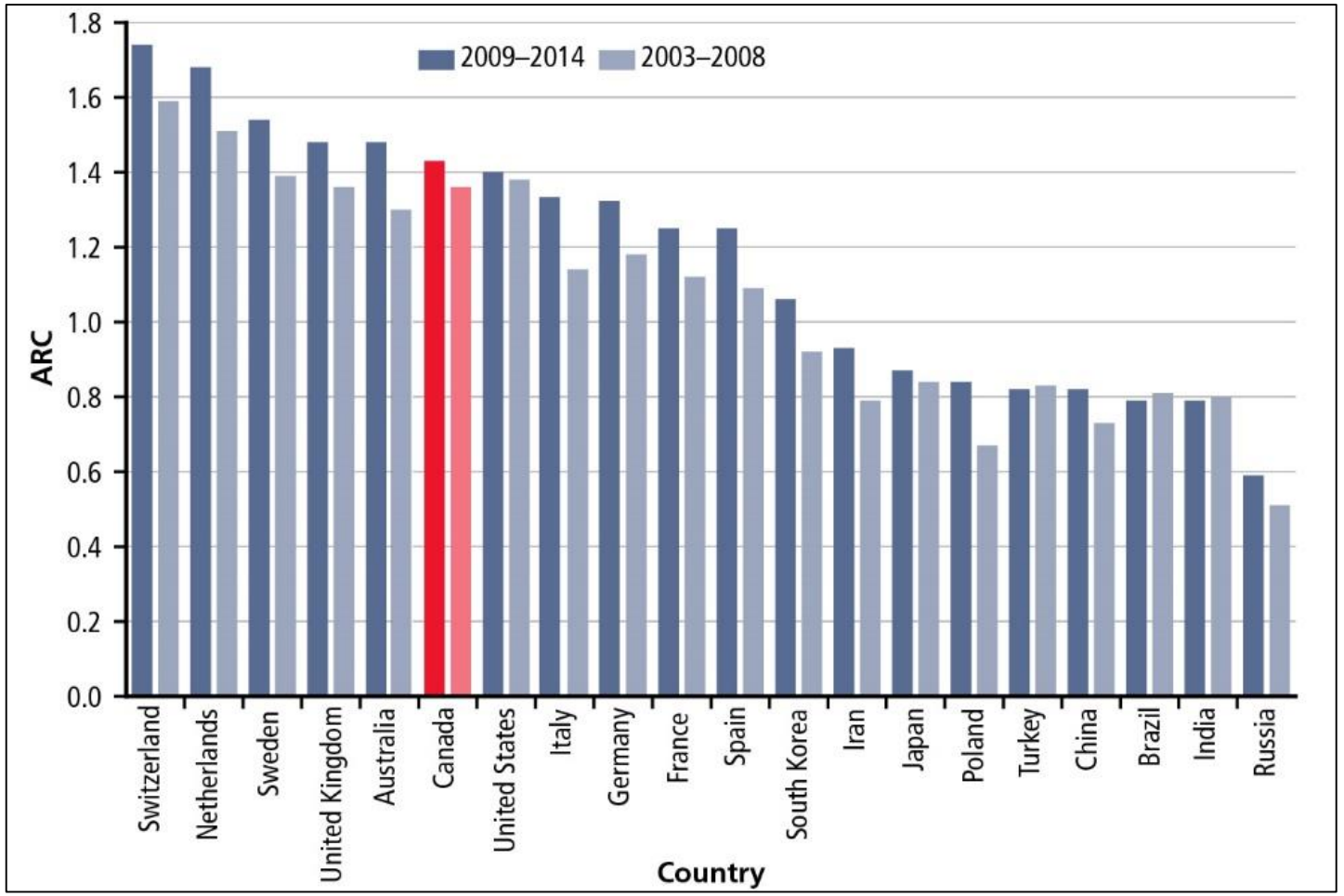
We compare well on most measures of research skills and education.

We are recognized for world-leading infrastructure.



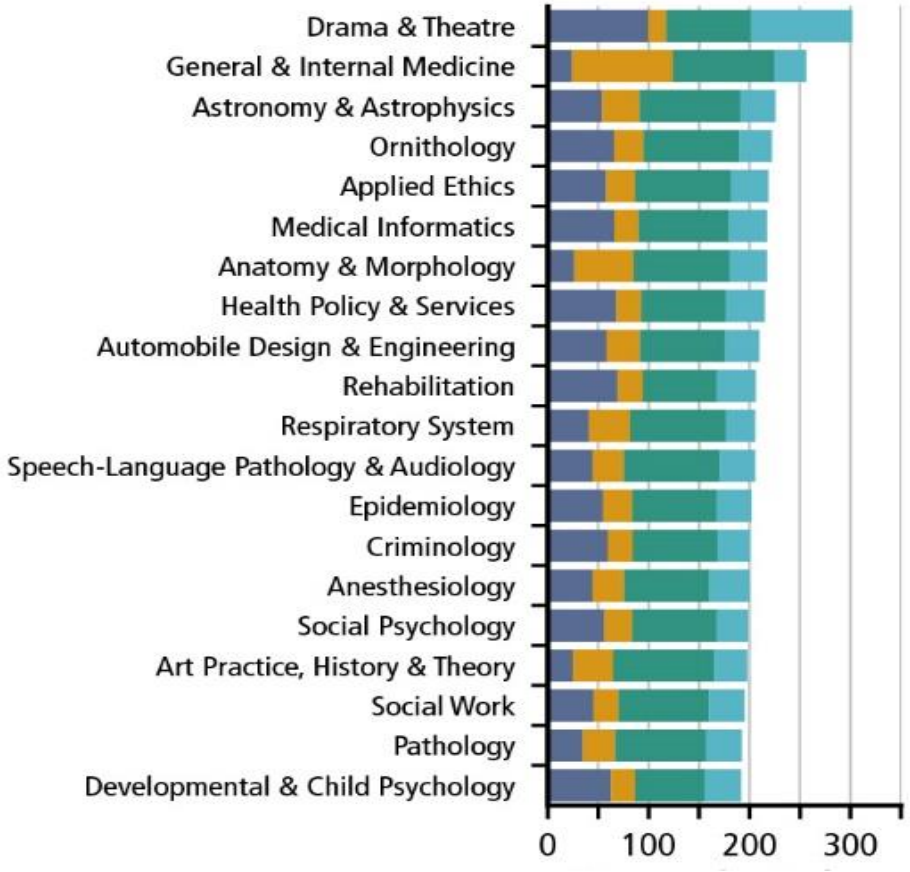
"…AND REMAINS A LEADING GLOBAL CONTRIBUTOR TO RESEARCH."

We've maintained our standing in published research impact (6th), and recognized strengths.

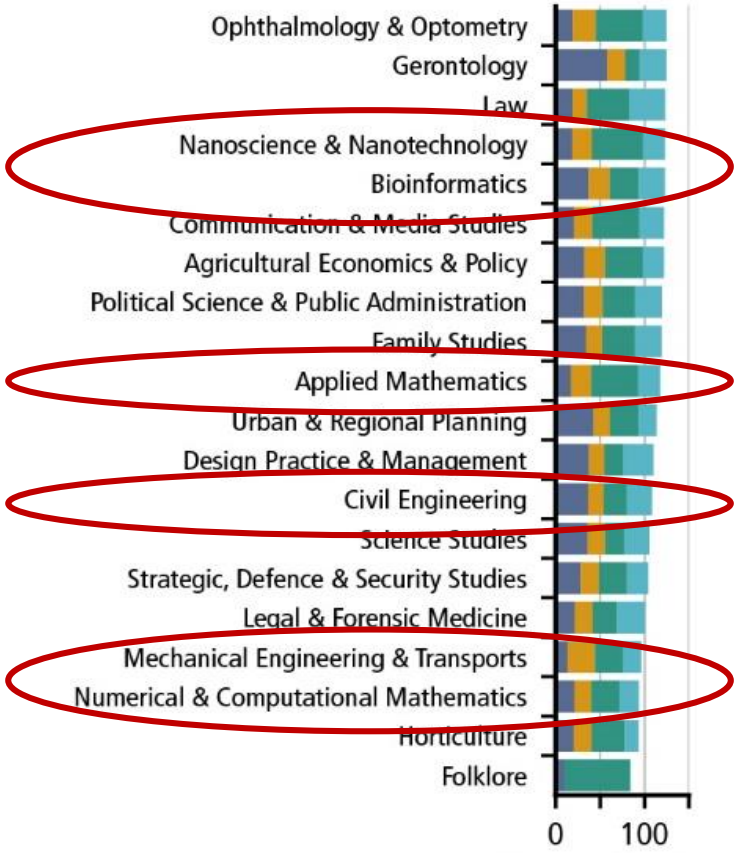


“HOWEVER, FOR COMPETIVENESS IN THE INNOVATION ECONOMY, OUR WEAKNESSES ARE STRIKING.”

Top 20 subfields of research



Bottom 20 subfields of research



Composite index-based magnitude, impact, and growth

“CANADIAN RESEARCHERS ARE MAKING IMPORTANT CONTRIBUTION ACROSS A WIDE RANGE OF RESEARCH FIELDS.”

Clinical Medicine

Public Health and Health Services

Psychology and Cognitive Sciences

Philosophy and Theology

Visual and Performing Arts

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"OUR RESEARCH EFFORT IS LAGGING IN AREAS OF ENABLING AND STRATEGIC TECHNOLOGIES."

- We are *not* a world leader in emerging research fields such as bioinformatics, energy, nanotechnology, and photonics.
- Canada has lost ground to other countries where it played a seminal role, such as artificial intelligence and regenerative medicine.
- This may limit Canada's ability to compete in tomorrow's global innovation economy.

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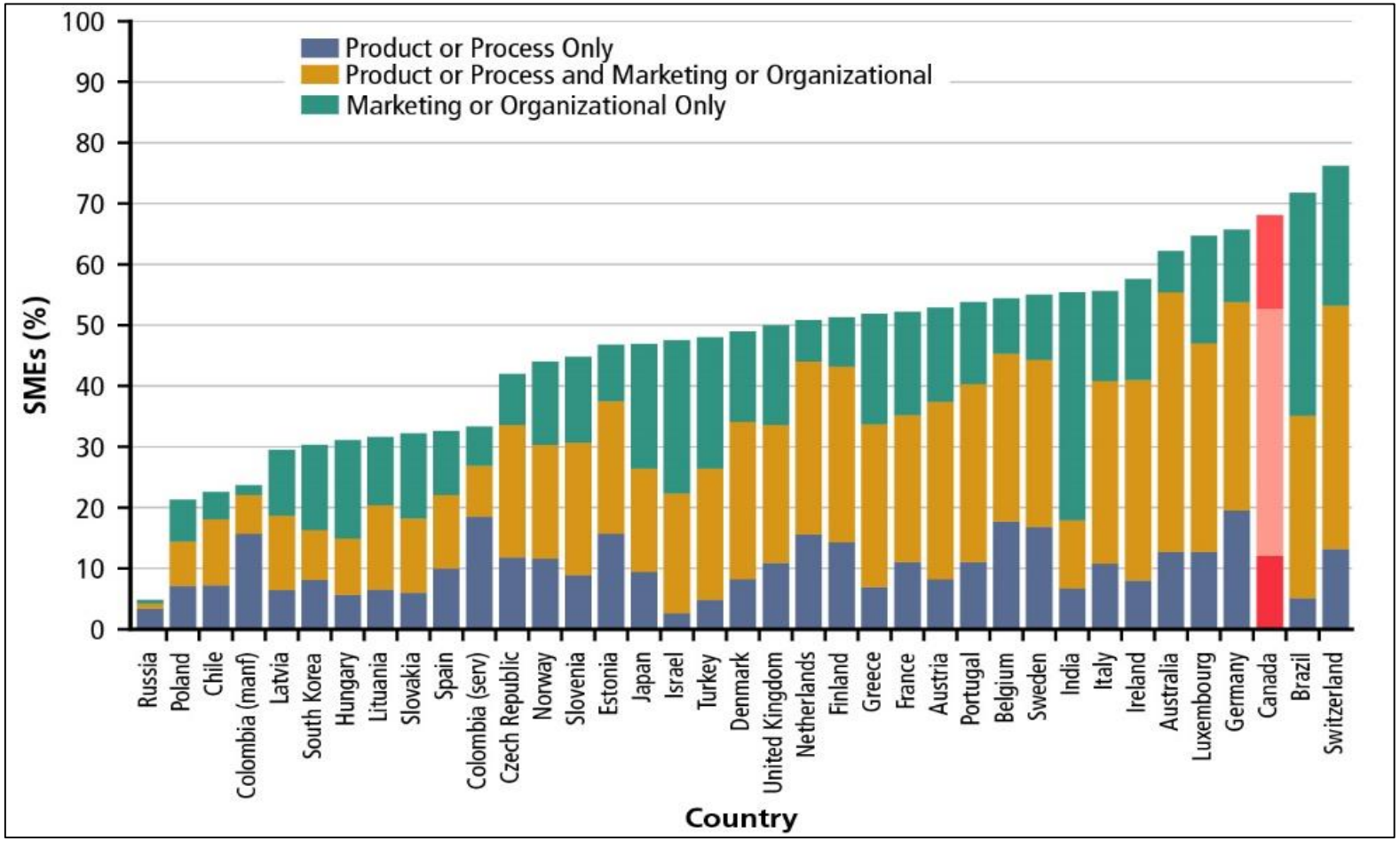
“FEW BARRIERS IMPEDE THE TRANSLATION OF R&D INTO TECHNOLOGICAL INNOVATION IN CANADA“.”



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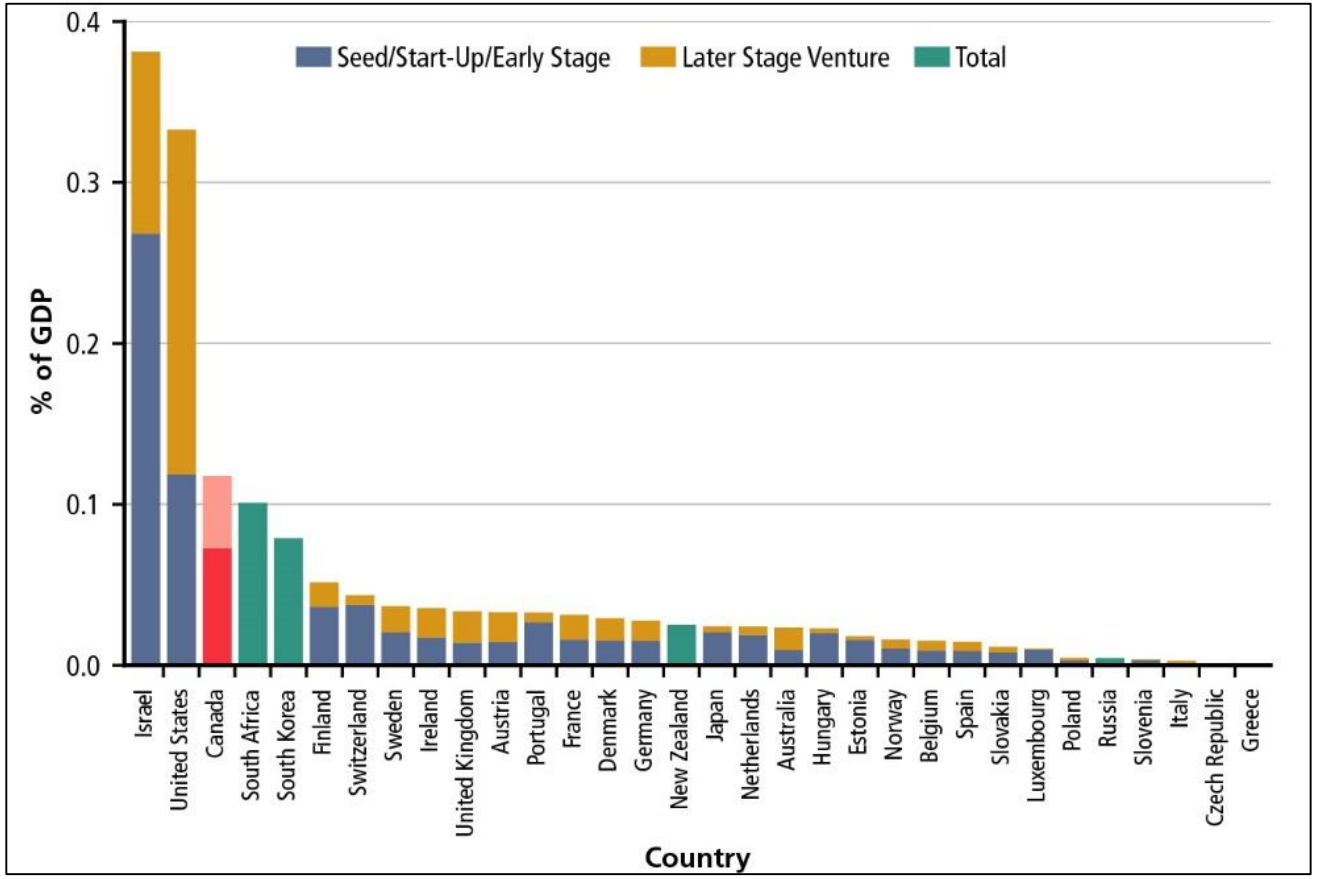
“CANADA IS HIGHLY COMPETITIVE INTERNATIONALLY IN PROVIDING A SUPPORTIVE ENVIRONMENT FOR ENTREPRENEURS AND TECHNOLOGY START-UPS.”



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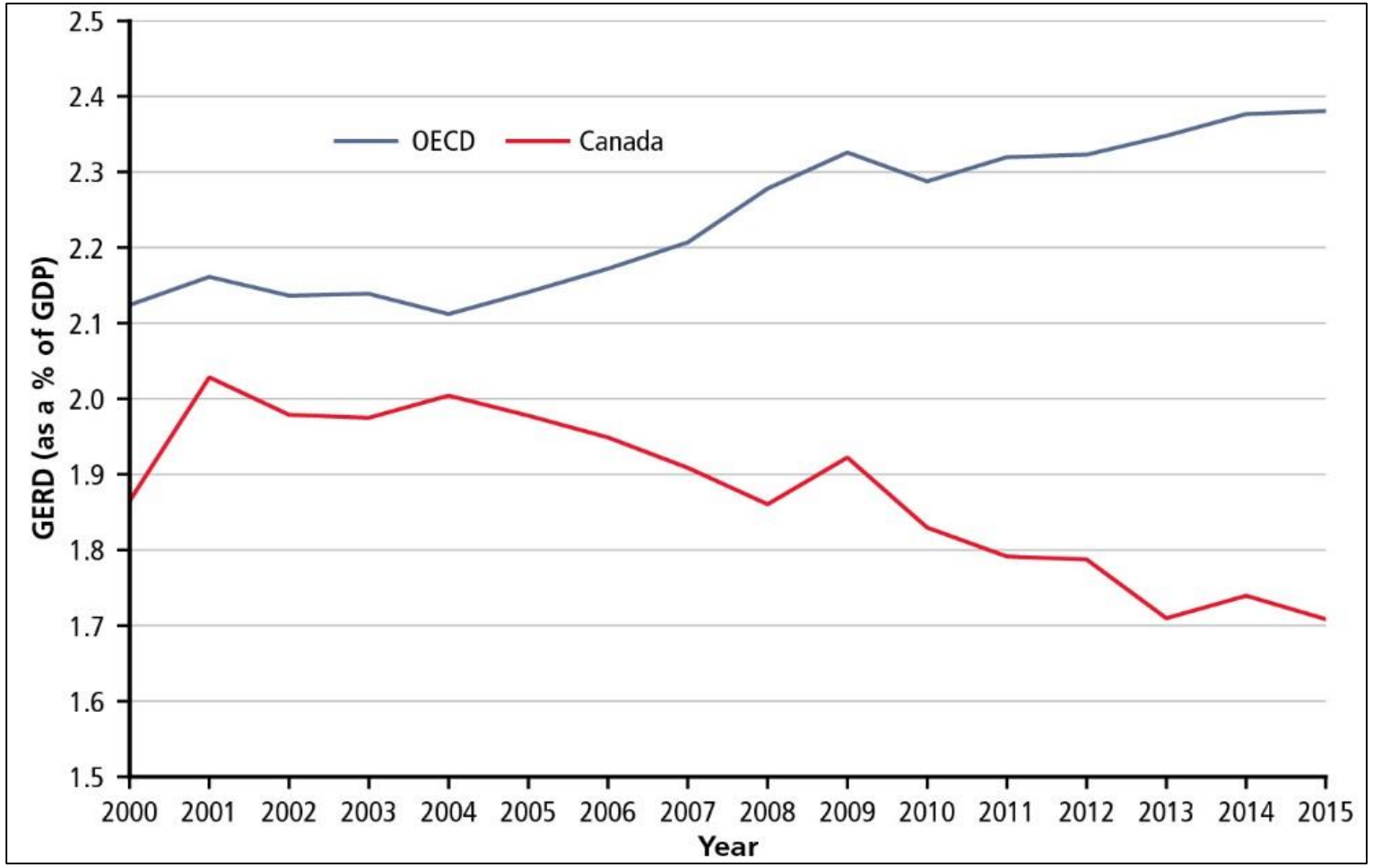
“OUR INTERNATIONAL STANDING AS A LEADING PERFORMER OF RESEARCH IS AT RISK DUE TO A SUSTAINED SLIDE IN R&D INVESTMENT.”



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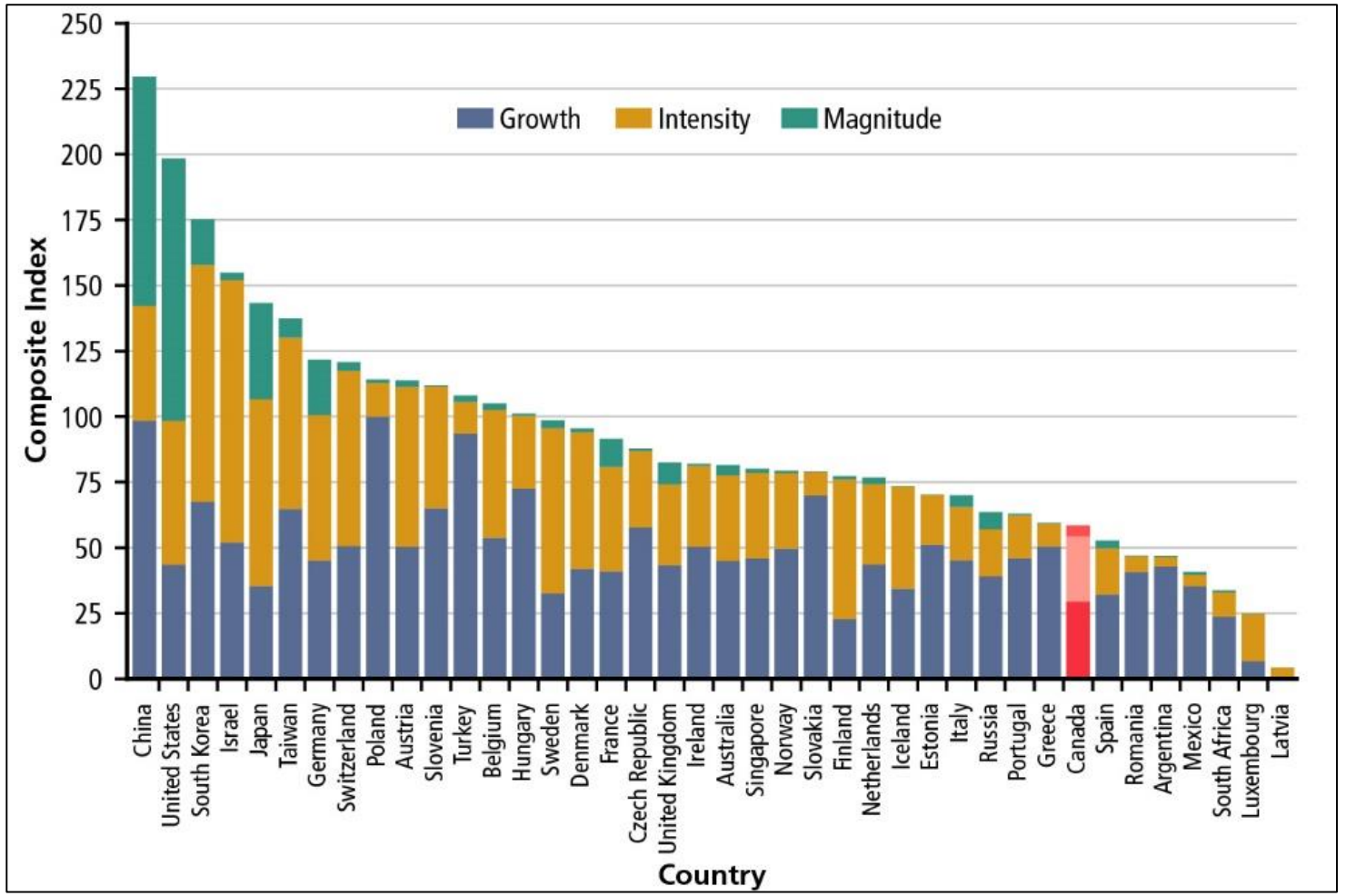
“CANADA IS NOT A LEADING COUNTRY IN INDUSTRIAL R&D.”

Canada ranks 33rd out of 40 countries on a measure of industrial R&D growth, intensity, and magnitude.



“INDUSTRIAL R&D SPENDING IS ERODING EVEN IN AREAS OF STRENGTH.”

Spending erosion is also evidenced in Canadian industries with significant R&D strength:

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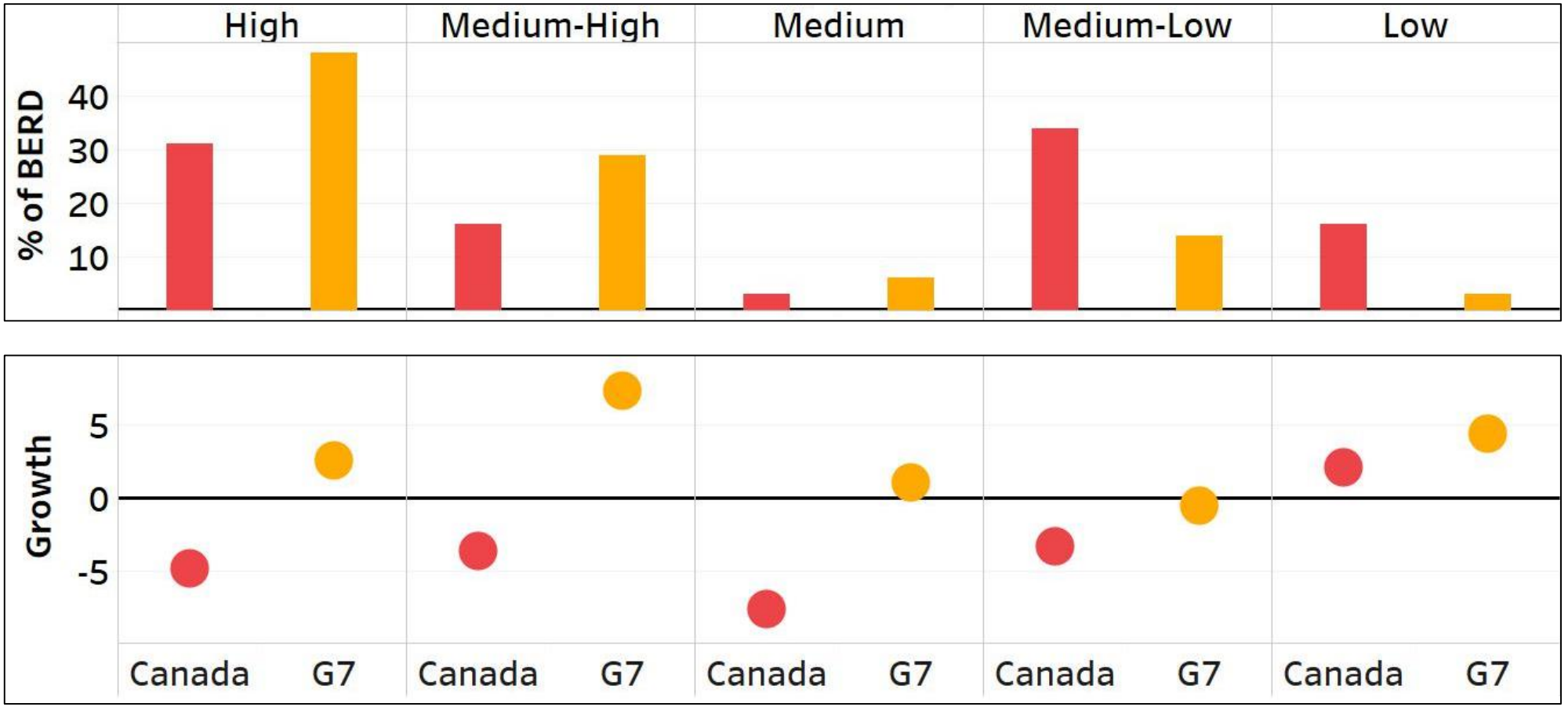
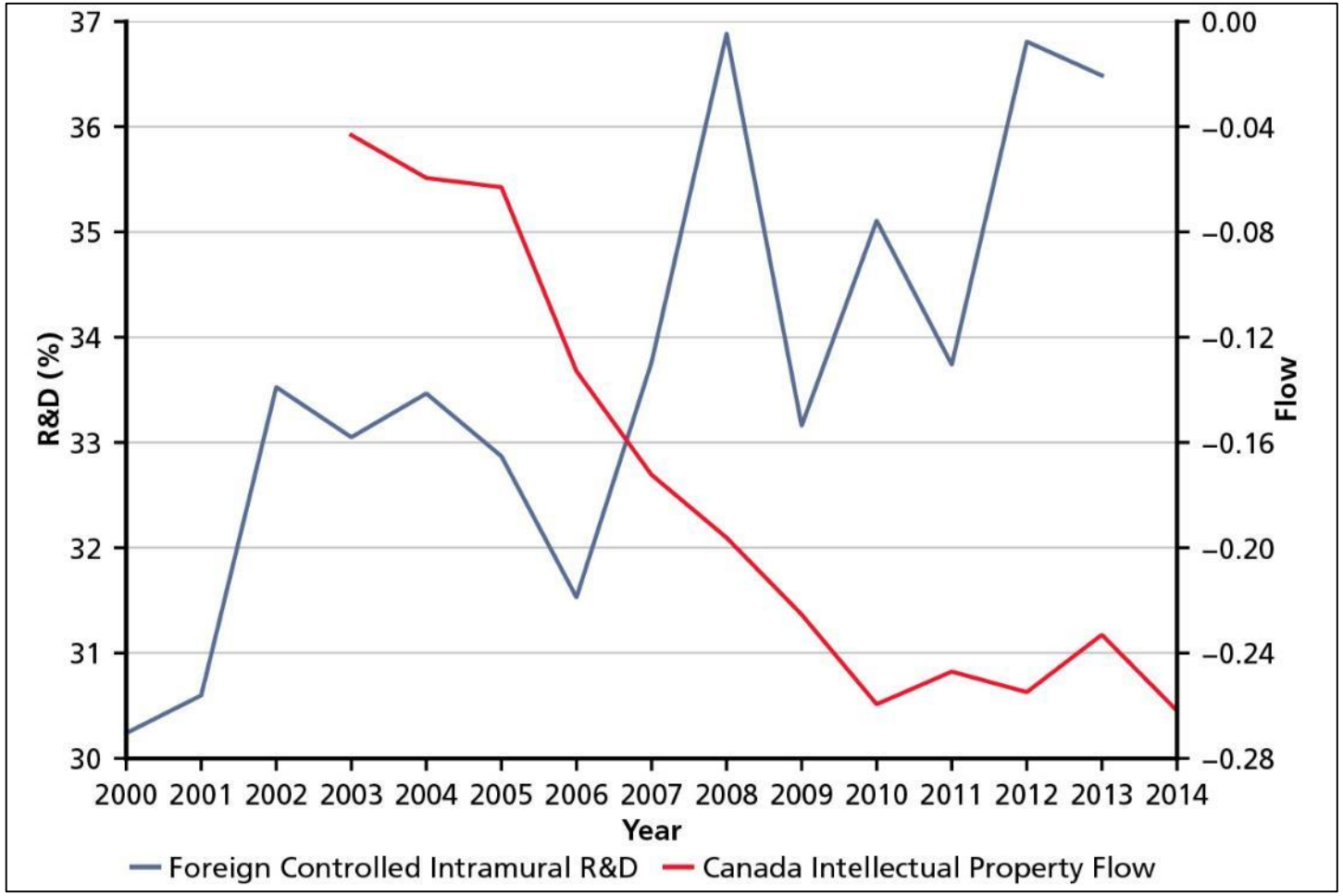
“CANADA’S INDUSTRIAL R&D IS MORE CONCENTRATED IN MEDIUM AND LOWER TECH INDUSTRIES.” DATA ARE FROM 2009-2013



“PATENT EXPORTS AND FOREIGN-CONTROLLED R&D ARE INCREASING…”



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COUNCIL OF CANADIAN ACADEMIES: STATE OF R&D IN CANADA

Canada produces 3.8% of the world's research but has declined from 7th to 9th

Psychology & Cognitive Science

Visual & Performing Arts

Philosophy & Theology

Earth & Environmental Sciences

Public Health & Services

Canada ranks 33rd in industrial R&D

Total spending declining

We spend ½ the OECD average

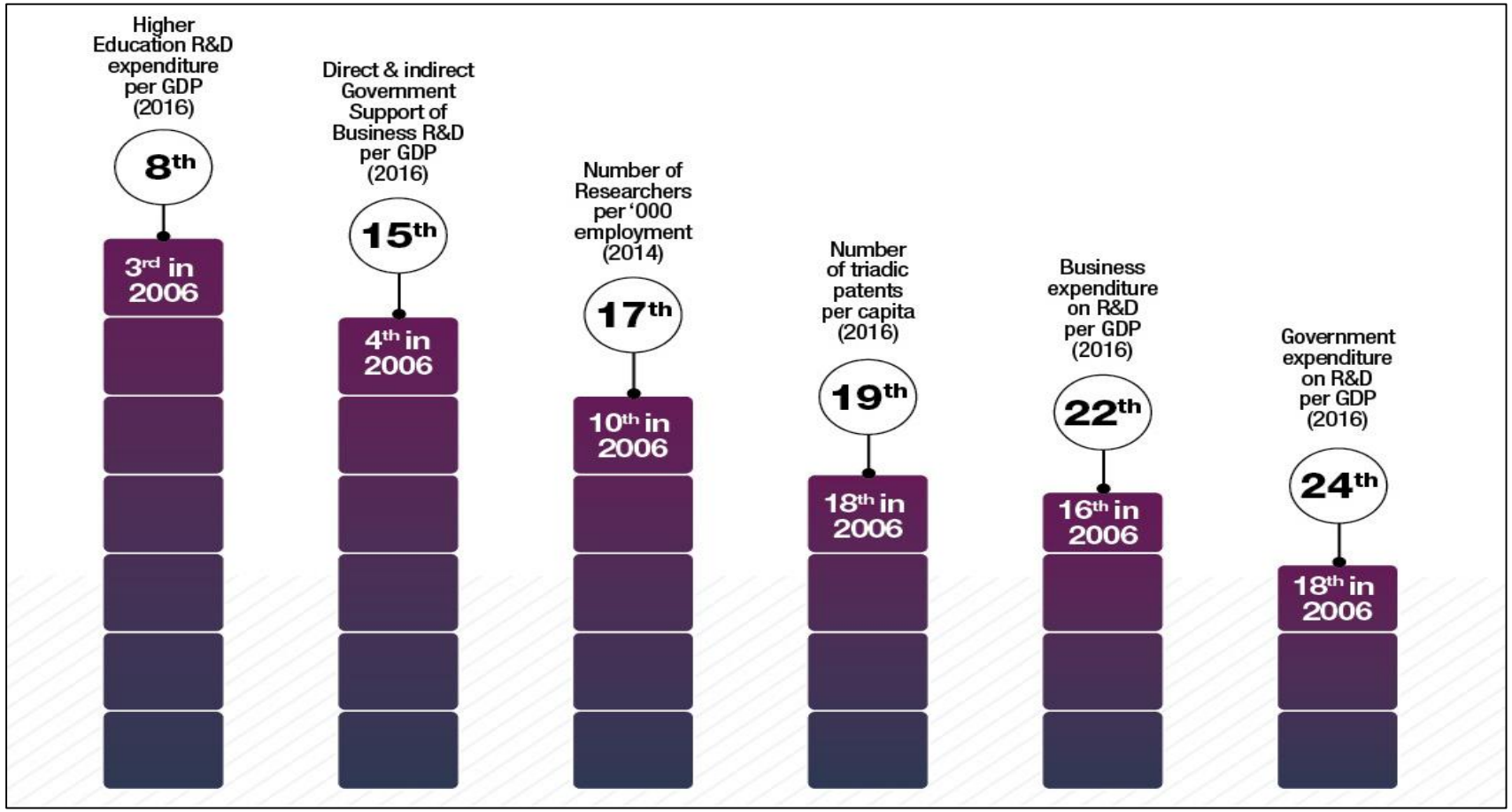
35% of R&D investment by foreign - controlled firms

1% of global patents are produced by Canada (18th worldwide)

34th worldwide for trademarks and industrial design

"The loss of innovative start-ups to foreign buyers, and the inability to grow a sufficient number of start-ups to scale, means that Canadians do not fully capture the social and economic benefits stemming from Canadian research advances."

CANADA'S RANKING ON SCIENCE TECHNOLOGY INDICATORS AMONG 36 OECD COUNTRIES



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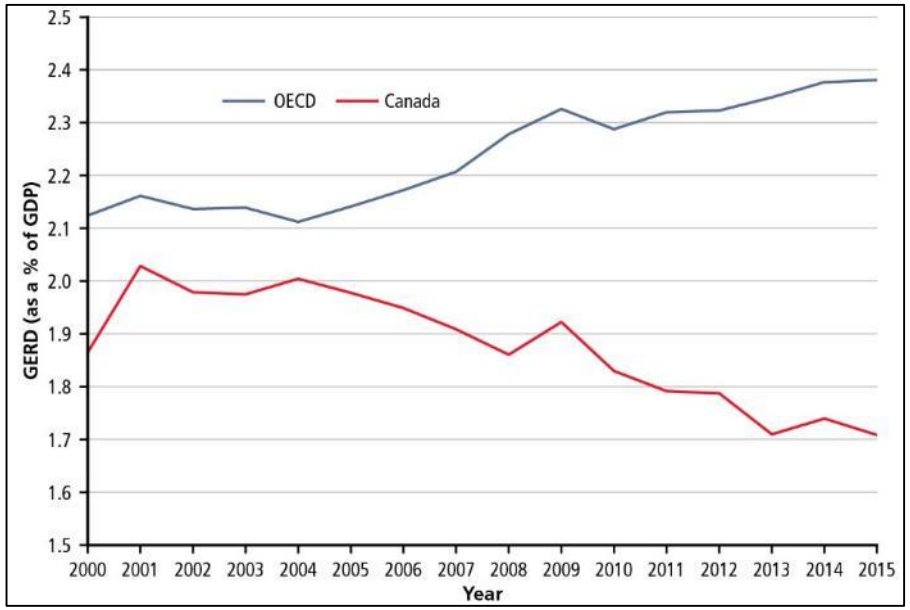
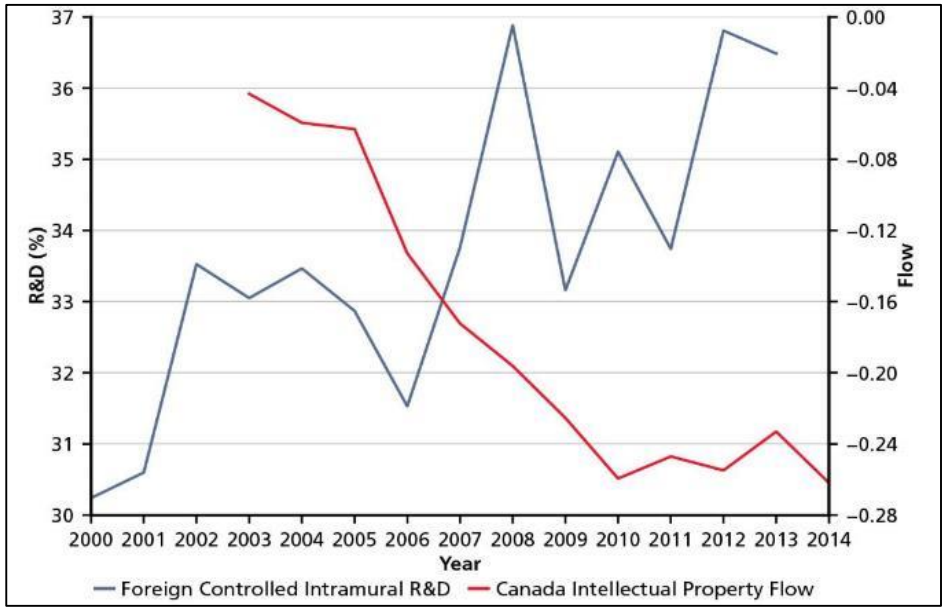
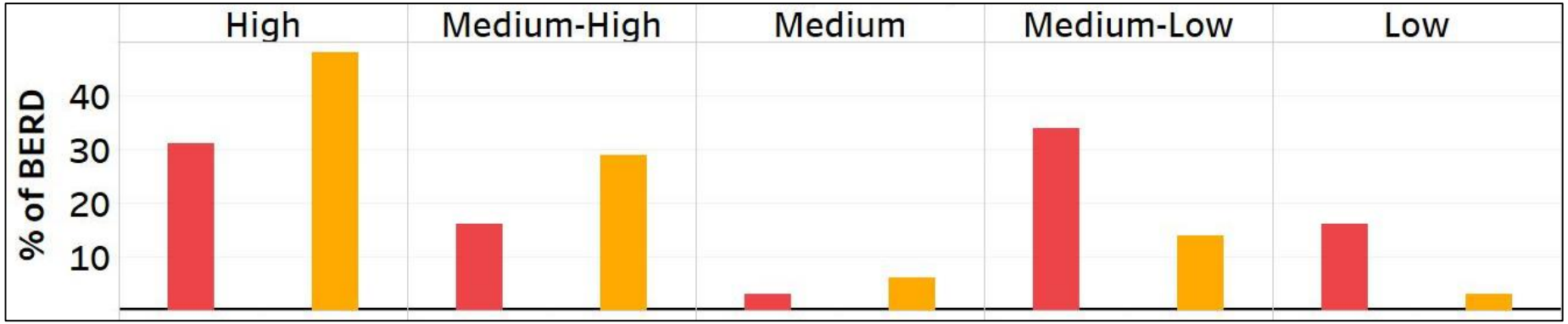
SO WHY SUCH A BLEAK PICTURE FOR INDUSTRIAL R&D?







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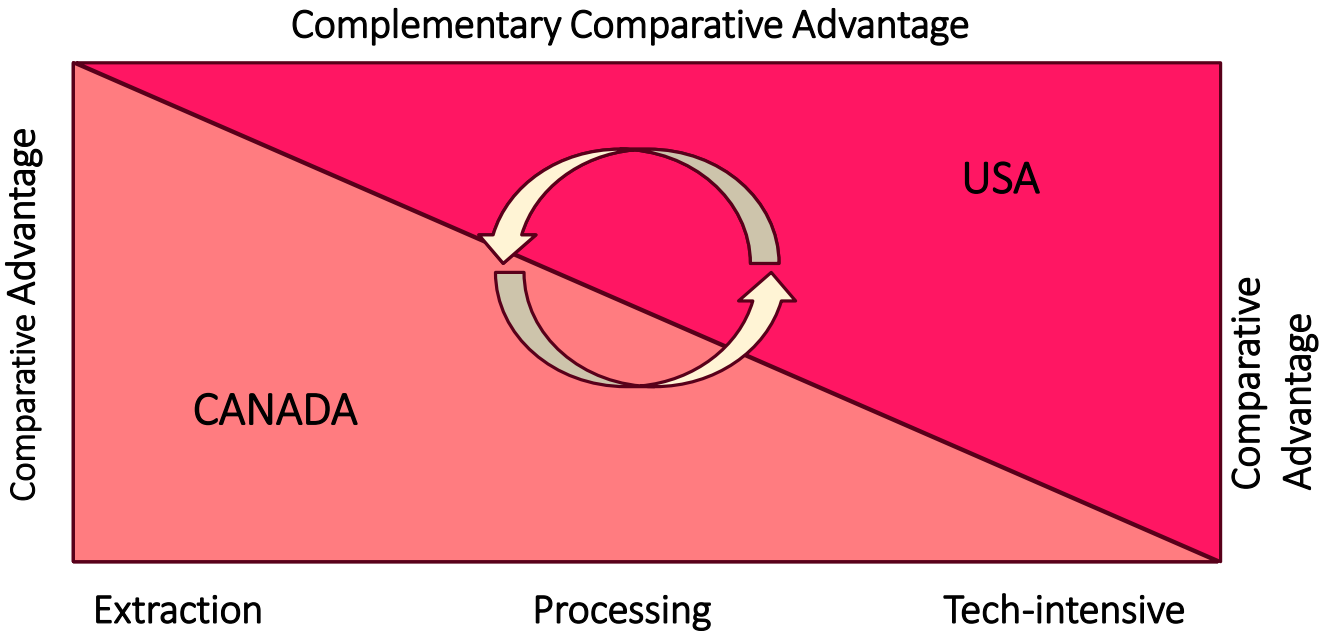
AN INTEGRATED ECONOMIC SPACE IN NORTH AMERICA



- The US has been by far the dominant provider of “innovation” to Canada through trade and FDI.
- Canadian business culture and behaviour reflect this long-standing dependency on US innovation.
- Limited size of domestic market necessitates strong policy support to level the playing field
- This explains the mediocre “home-grown innovation” performance (on average) of Canadian business.

A profitable symbiosis for both sides, which has thus endured

CCA'S KEY TAKE HOME MESSAGES

- Canada has deep pools of research talent and remains a leading global contributor to research.
- But other countries are now outpacing Canada in R&D investment, ultimately putting our prosperity at risk.
- Too many of Canada's tech start-ups grow elsewhere, leading to a loss of economic and commercial benefits for Canadians. Outflow of opportunity, talent, and IP.
- Momentum and reputation drive talent and money. It is time to act.

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Council of Canadian Academies
180 Elgin Street, Suite 1401
Ottawa ON K2P 2K3

www.cca-reports.ca
613-567-5000
@cca_reports