

# Reforming SR&ED: An Ontario Perspective

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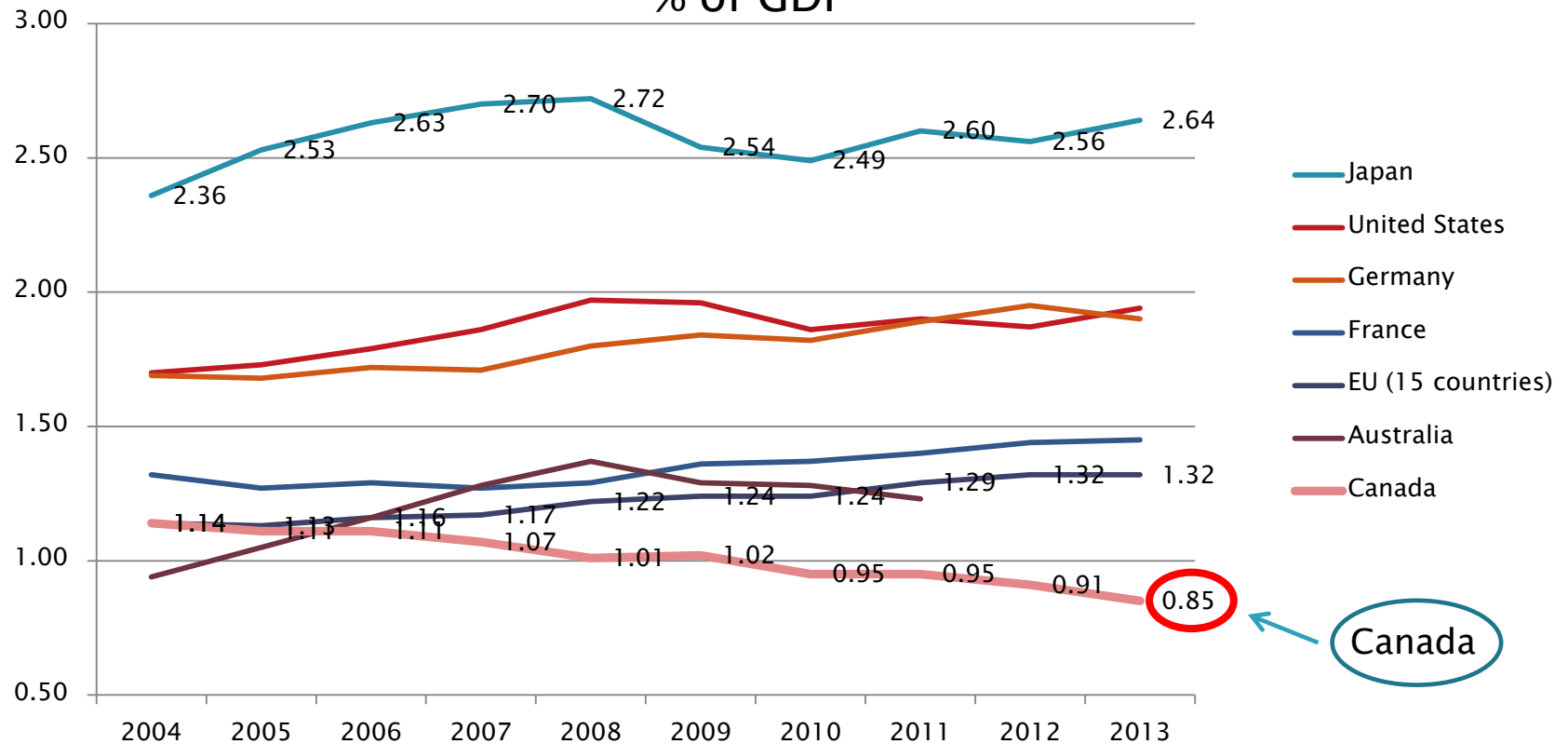


# Reforming the Scientific Research and Experimental Development Tax Program

- ▶ Is SR&ED delivering intended results?
- ▶ Can it be improved?
- ▶ Should Ontario be concerned?

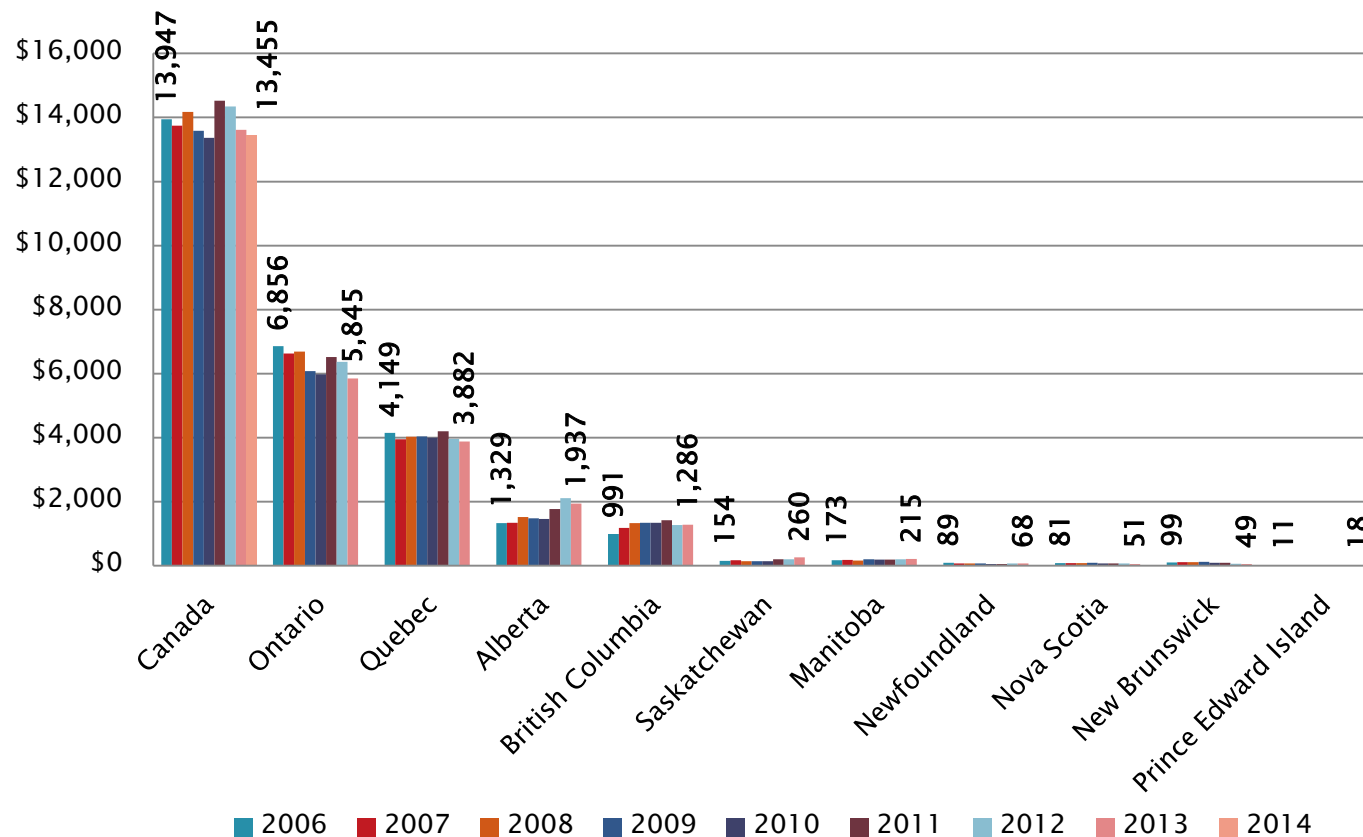
# Canada's Business R&D Performance

BERD:GDP Ratios, Selected Countries (OECD MSTI 2016)  
% of GDP



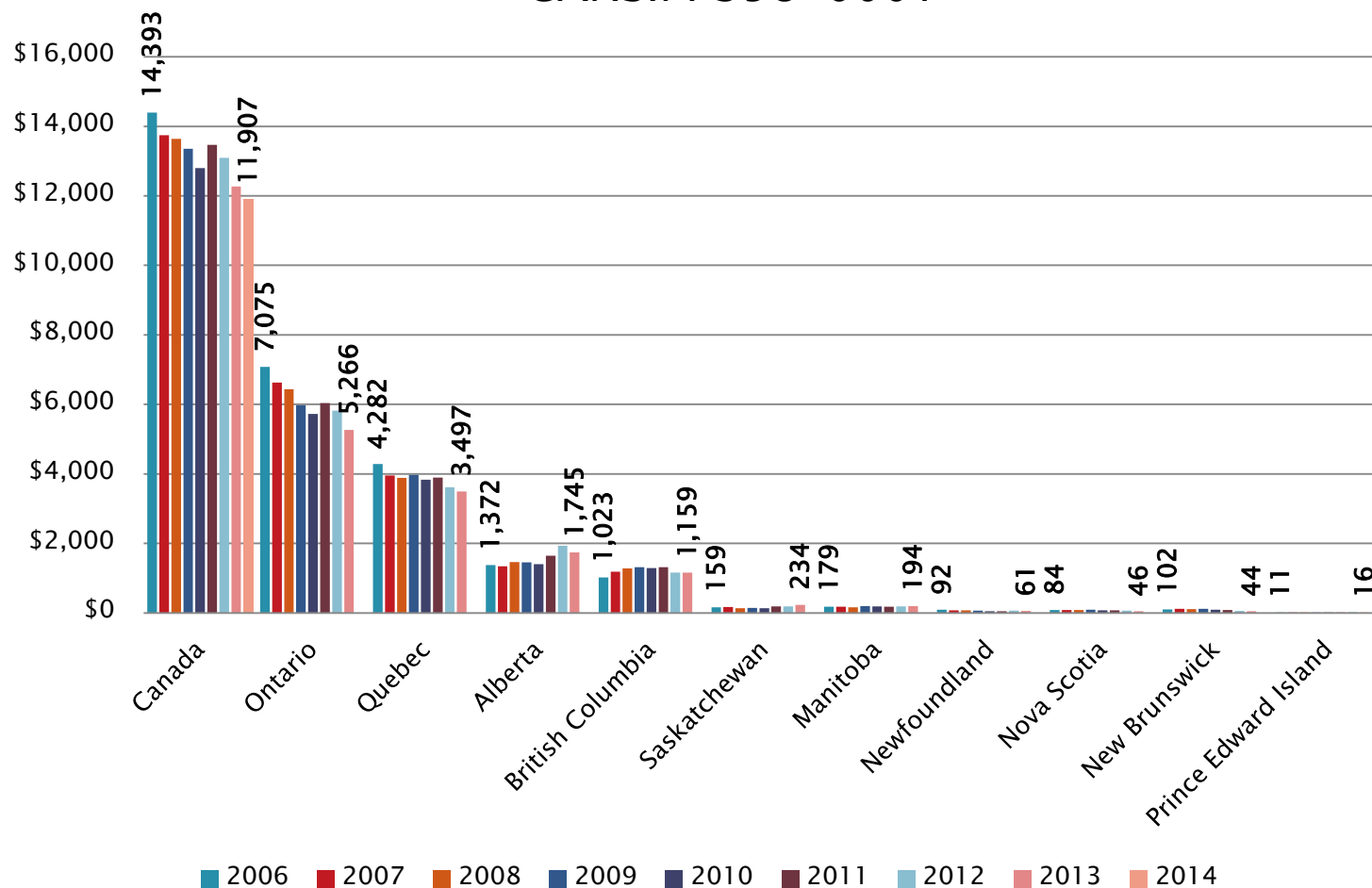
# Business Expenditure on R&D, Current \$M

CANSIM 358-0001



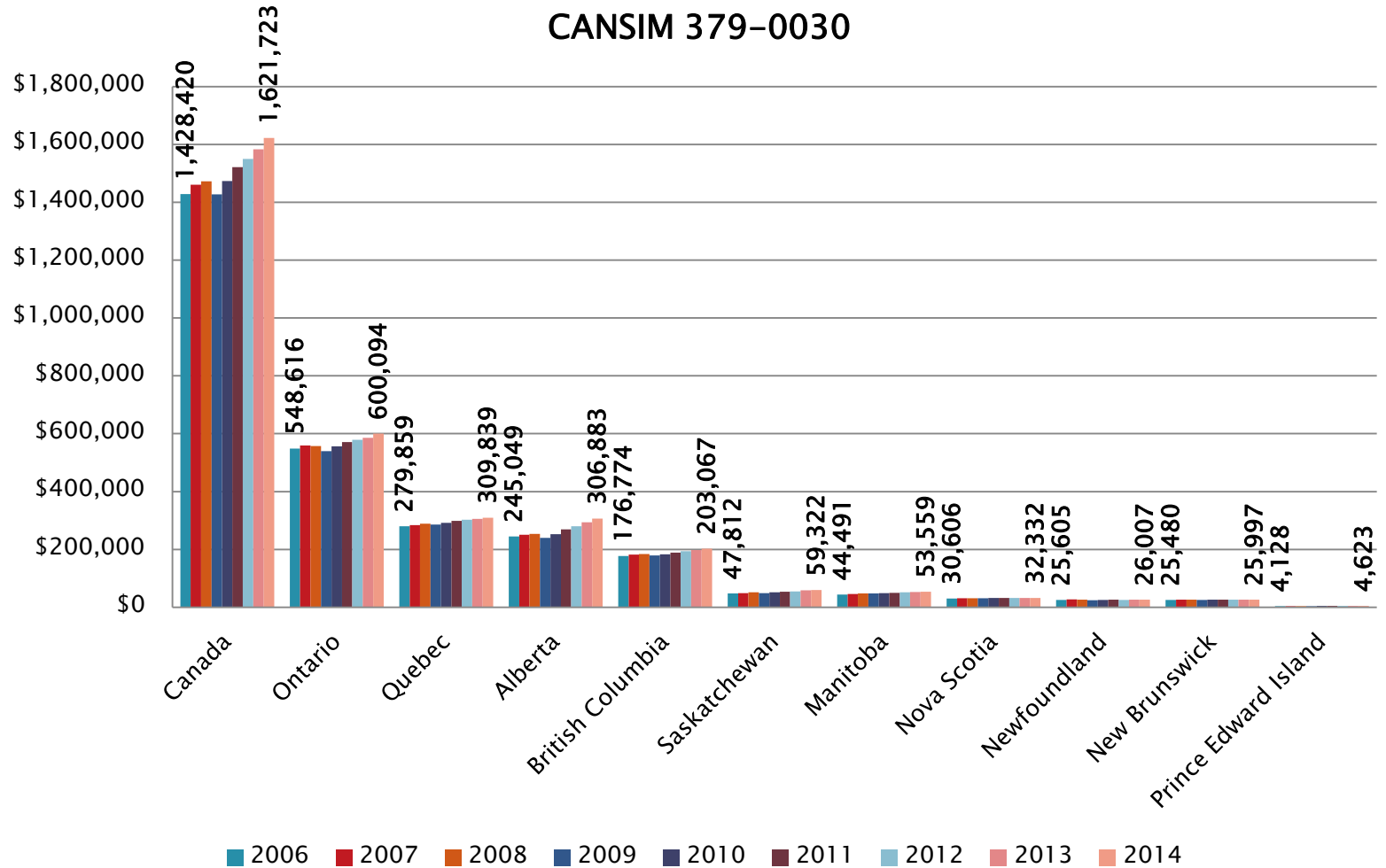
# Business Expenditure on R&D, Constant 2007 \$M

CANSIM 358-0001

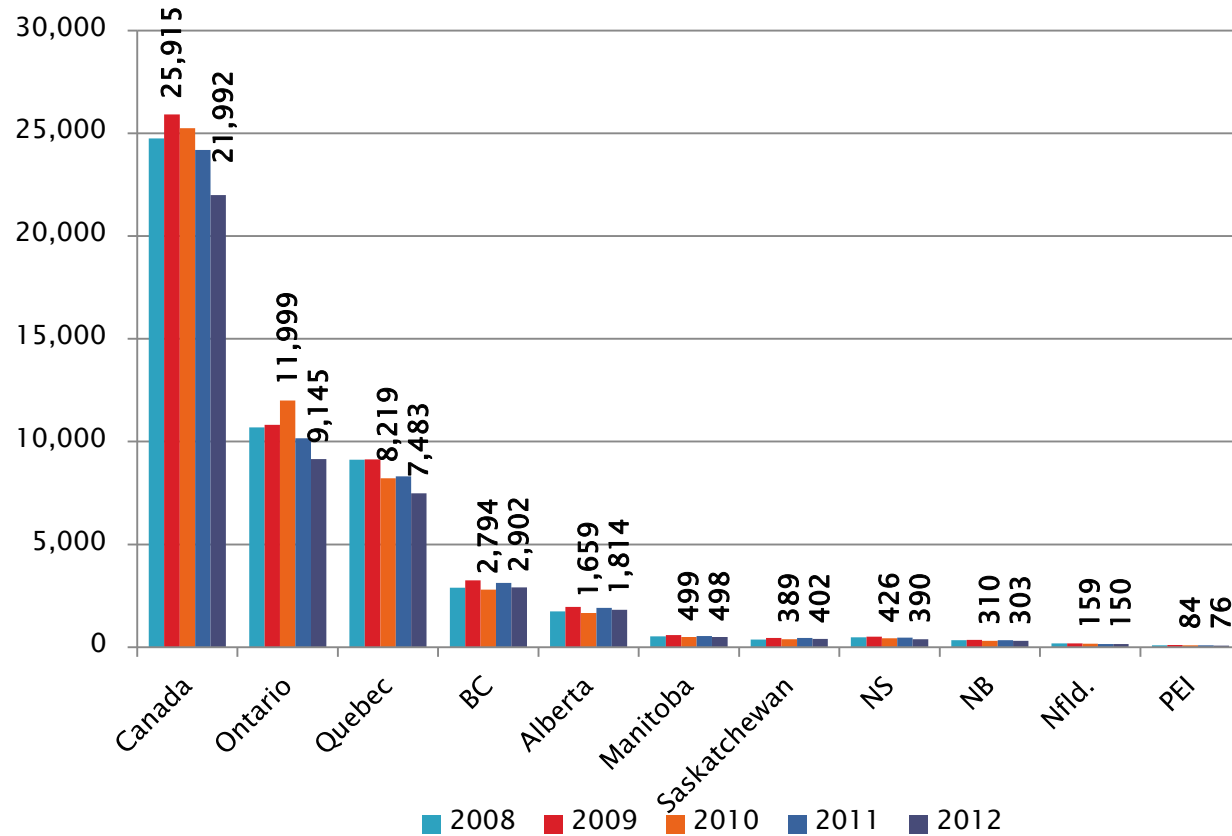


# GDP, Chained 2007 \$M

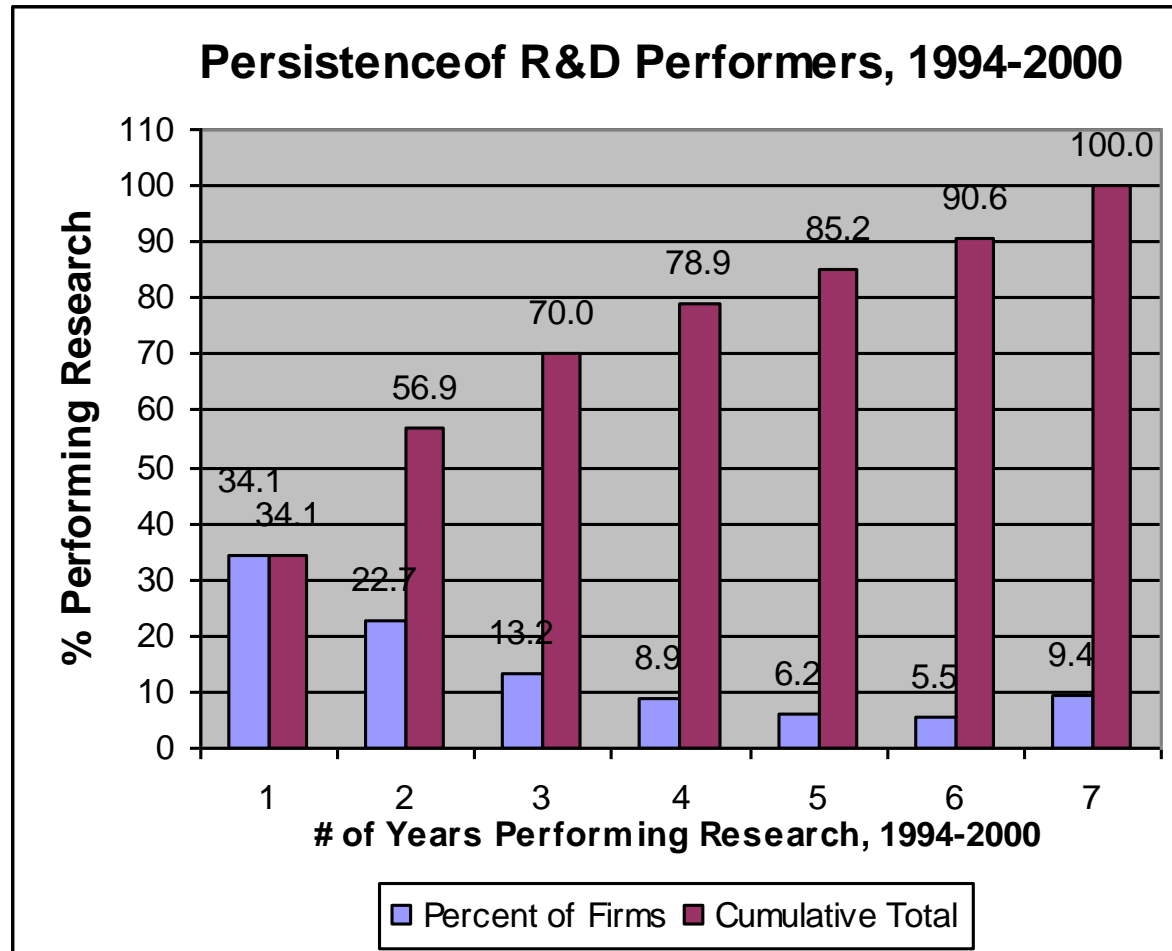
CANSIM 379-0030



## Number of Business R&D Performers CANSIM 88-202-X



# R&D Performers – A Moving Target



Source: The Demographics of Industrial Research in Canada 1994-2000.  
Ron Freedman. January 2005



# Proposed Factors in Canada's BERD Performance

1. Industry sector composition/Structural economic factors
2. Loss of manufacturing companies
3. Fewer large companies than in other countries
4. Small markets/lack of scale
5. Low competitive intensity
6. Shortage of venture capital funding
7. Poor commercialization of university research
8. Shortage of direct government funding for research (e.g. IRAP)
9. Over-reliance on indirect funding (e.g. SR&ED)
10. Government procurement policies
11. Multi-Factor Productivity deficiencies
12. Poor business innovation strategies

# Other factors – Not usually discussed

- ▶ Denominator effect
  - GDP growth outpaces BERD growth
- ▶ Incompatible measurement systems
  - Canada measures research incidence
  - ROW measures research prevalence
  - Canada excludes SSH R&D
  - ROW includes SSH R&D
- ▶ Elimination of R&D capital write-off (2014)
  - Impact in recent years
- ▶ Volatility of data
  - Large performer effect
    - e.g. Nortel (\$1.9b (2007); \$864m (2010); \$0 (2015))
- ▶ Tax policy/administrative changes

# Bottom Line: 2 Drivers

- ▶ Reasons attributable to firms
  - Weak management, risk aversion, poor strategies, etc.
- ▶ Reasons attributable to (government) incentives
  - Innovation support programs not fit for purpose
  - **Focus on the country's largest innovation support program – SR&ED**

# Why Focus on SR&ED?

- ▶ Canada's/Ontario's largest industrial research support program by far
  - ~ \$3.5b annually
  - Provincial (Ontario) top-up \$\$ in addition
  - Provides investment tax credit (ITC) of 35% up to the first \$3 million of qualified expenditures for SR&ED carried out in Canada (CCPEs), and 20% on any excess amount
  - Refundable for SMEs
- ▶ On the evidence, it's not working
  - Canada in 14<sup>th</sup> position in Business Expenditure on R&D as a proportion of GDP (GERD:GDP ratio)
  - BERD is declining (both in current \$ and constant \$)
  - # of R&D performers dropping
  - Our international position appears to be deteriorating
  - Not getting "bang for buck"

# On the Wrong Track?

## What SR&ED funds

### ▶ Basic research

- Work undertaken for the advancement of scientific knowledge without a specific practical application in view. It is usually carried out in a laboratory setting ... The results of basic research are usually published in scientific journals

### ▶ Applied research

- Work undertaken for the advancement of scientific knowledge, but with a specific practical application in view. Like basic research, the results could be published in scientific journals

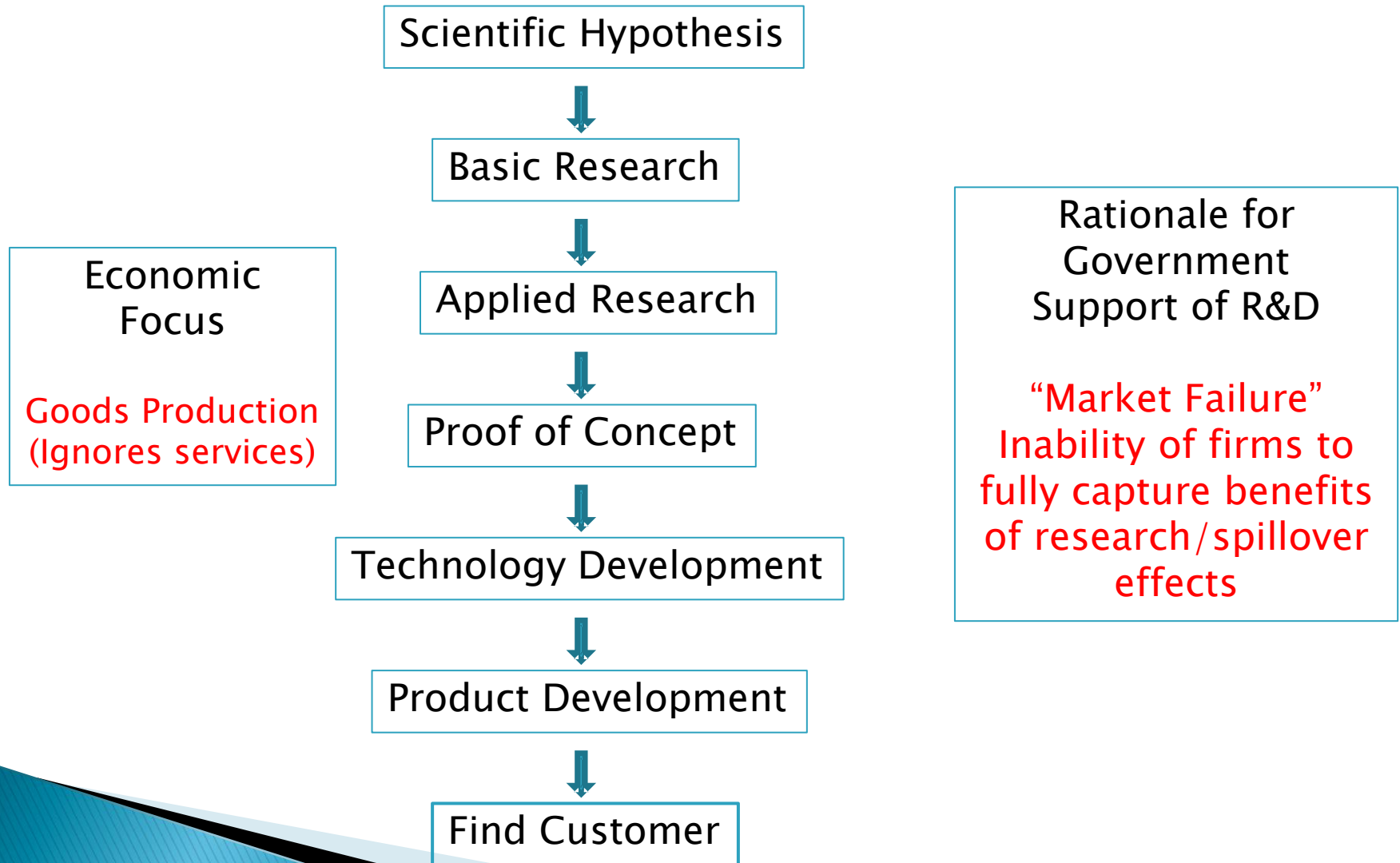
### ▶ Experimental development

- Work undertaken for the purpose of achieving technological advancement for the purpose of creating new, or improving existing, materials, devices, products, or processes, including incremental improvements

# SR&ED Eligibility “Tests”

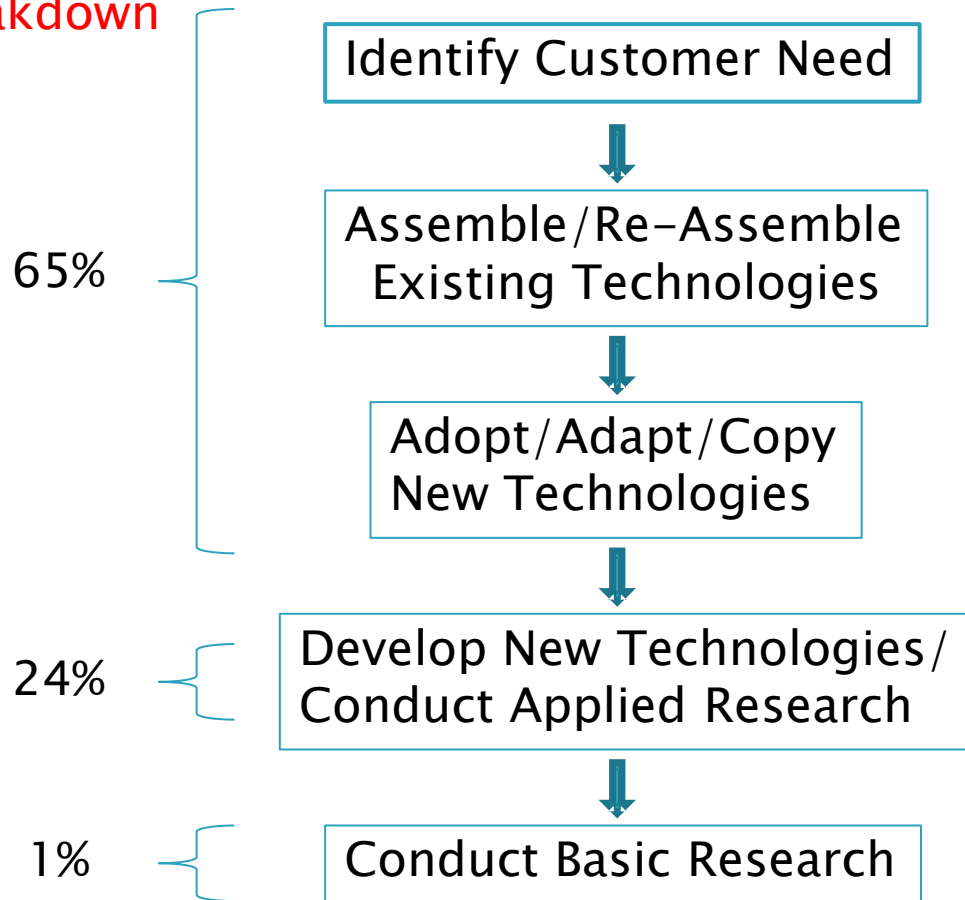
- ▶ Was there a scientific or a technological uncertainty?
- ▶ Did the effort involve formulating hypotheses specifically aimed at reducing or eliminating that uncertainty?
- ▶ Was the overall approach adopted consistent with a systematic investigation or search, including formulating and testing the hypotheses by means of experiment or analysis?
- ▶ Was the overall approach undertaken for the purpose of achieving a scientific or a technological advancement?
- ▶ Was a record of the hypotheses tested and the results kept as the work progressed?

# Flawed SR&ED Paradigm: Academic Innovation Chain Model



# Business Innovation in the Real World

## Breakdown



Rationale for  
Government  
Support

**“Competitive Advantage”**



# Unintended Consequences of SR&ED

- ▶ Unpredictable eligibility produces high level of financial risk for firms
- ▶ Locks many firms into unproductive work
  - i.e. Research versus Product/Service development
- ▶ System gaming by firms
- ▶ Overlooks 70% of economic activity (services)
- ▶ Inconsistent application of guidelines
- ▶ Slow decision-making
- ▶ High transaction costs
  - Widespread use of SR&ED “consultants”
- ▶ High program administration costs
- ▶ Misallocation of public resources
  - To science ... from innovation/commercialization

# Changing Paradigms:

## *Old Paradigm*

- ▶ Rewards conducting scientific research
- ▶ WHY?
  - Assumes R&D is converted to products, services
    - Problem: Make-work, activity-based
- ▶ Paradox: SR&ED simultaneously encourages inappropriate behaviour and makes it difficult to comply!

# Changing Paradigms: *The New Paradigm*

- ▶ Develop Technological Capabilities
  - Improve firm capabilities
  - Lay groundwork for new goods, services
  - Encourage firms to add value to innovations

# Key Policy Issue

- ▶ Fund research?
- ▶ Fund capacity–building?

# Alternative: The TRL Approach to Capacity-Building

Government  
Support ?

Technology Readiness Levels	
TRL 1. Basic principles observed and reported	
TRL 2. Technology concept and/or application formulated	
TRL 3. Analytical and experimental critical function and/or characteristic proof of concept	Yes
TRL 4. Component and/or breadboard validation in laboratory environment	
TRL 5. Component and/or breadboard validation in relevant environment	
TRL 6. System/subsystem model or prototype demonstration in a relevant environment	
TRL 7. System prototype demonstration in an operational environment	No
TRL 8. Actual system completed and qualified through test and demonstration	
TRL 9. Actual system proven through successful mission operations	

# Benefits of TRL

- ▶ Focuses on what's important to firms and economy
  - Encourages firms to move from S&T focus (perform research) to commercialization focus (develop products, services)
- ▶ Companies already familiar with TRL approach
- ▶ TRL is consistent with a value-added approach to supporting R&D
  - Each step on the TRL “ladder” adds value
- ▶ Reduces transaction costs for firms
- ▶ Reduces system gaming

# Next steps

- ▶ Confirm analysis
- ▶ Confirm TRL benefits approach
- ▶ Raise issue with Finance Canada
- ▶ Re-model SR&ED program
- ▶ Develop transition strategy

# Thank you

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