# Missing M in SME

*Why do small technology businesses fail to grow in Alberta?*


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Alopex Management Consulting, Inc.


*Helping SMEs Grow to The Next Level and Compete in Global Markets*

ALOPEX MANAGEMENT CONSULTING INC.

# Set Context For 2014 Theme

Provide Key Benchmark Data
Useful Recent Reports

Avoid Rehashing 'Knowns'
About SME Challenges in Alberta & Canada

Canadian Economic Structure & Competitiveness

Share EMBA Alberta Innovation Ecosystem Study Results

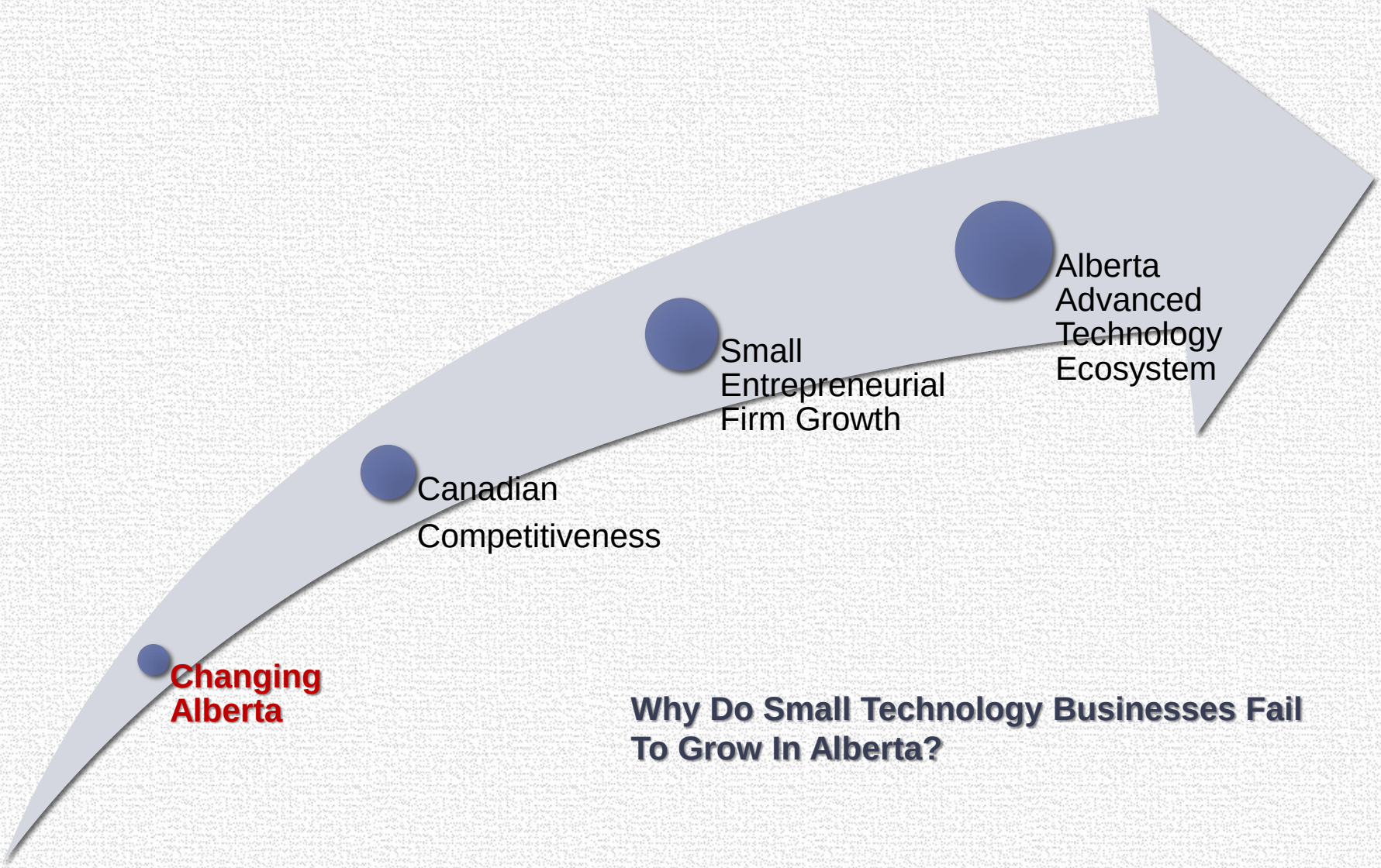
***Goal of Presentation***

# Key Questions

- Why do only 1 out of 10 technology firms survive in Alberta?
- Why should we care?
- Is Alberta any different than other locations in Canada or the rest of the world? Unique impediments to growth?
- What are the key technology demand drivers in Alberta's industry sectors? Compelling visionary initiatives?

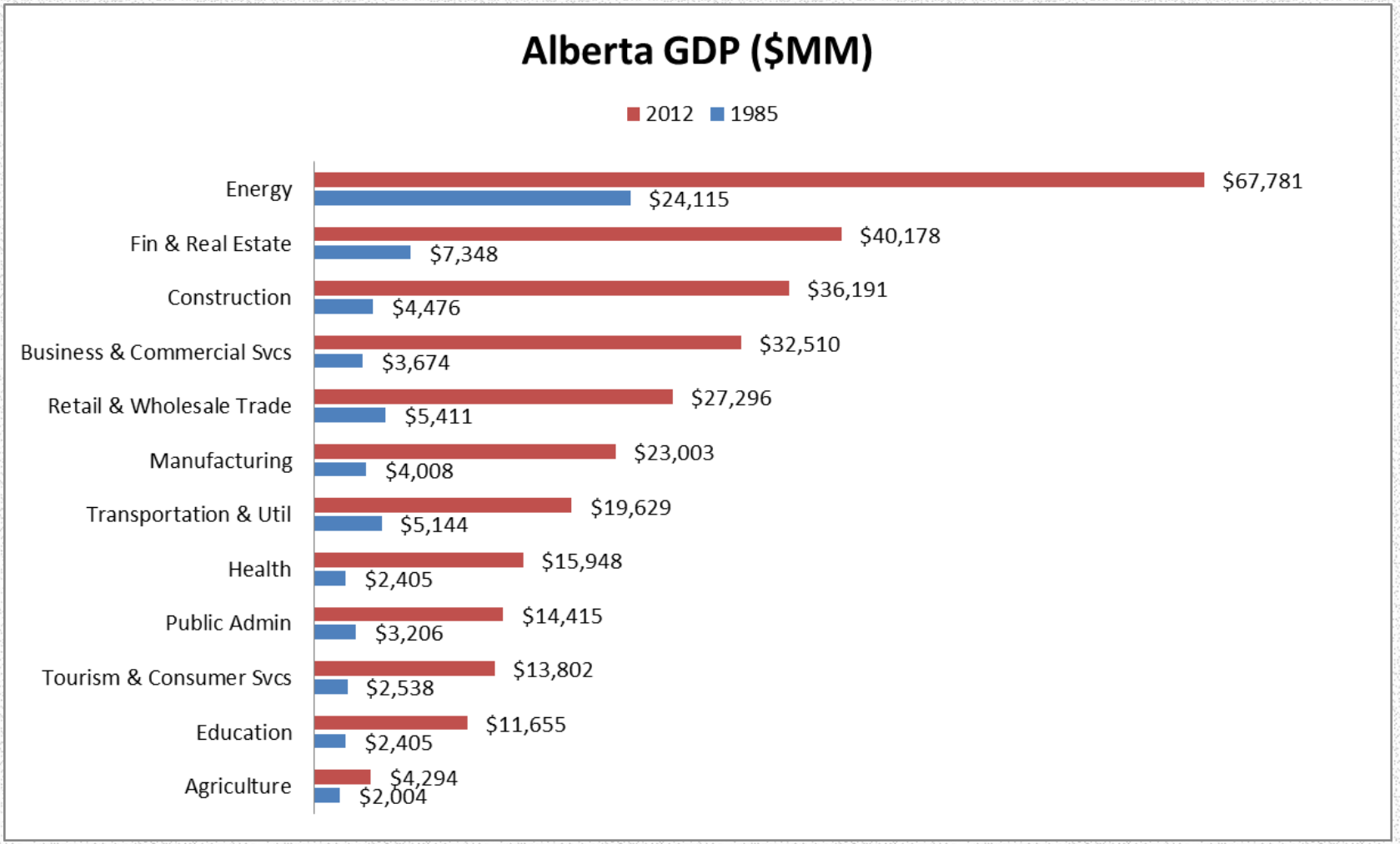
- Why Care? More Productive, Hire More, Can Compete Better Internationally, & Invest More in R&D Which Drives Technology Innovation
- Alberta Still Young & Immature Economy
- Alberta Firm Size Distribution Similar To Rest of Canada, Slightly Higher Proportion of SMEs (Younger Industries/Supply Chains)
- Alberta Business Growth Problems Similar To Other Jurisdictions But There Are Local Issues
- Gap Between  Technology Aspirations and Canada's Industries
  - The 'Hewers of Wood & Drawers of Water Problem'
  - Low Technology Receptor Demand in Western Resource Industries
- Rapidly Growing Manufacturing & Value Add Sectors Slowly Increasing Tech Intensity in Alberta
- Since 2009 Innovation Renovation Improved Success In Small Energy, Environment, Biotech, Health
  - Less So In Other Less Mature Clusters/Ecosystems/Sectors.

***Small Technology Business Growth***




**Why Do Small Technology Businesses Fail To Grow In Alberta?**

| | | |
|---|---|---|
| Population | 2,318,000 – 3,889,000 | 1.7x |
| GDP | $66,800MM - $306,700MM | 4.6x |




Source: June 2013 Alberta Economic Highlights – AB Enterprise and Advanced Education

## Growth Since 1985

| | | |
|---|---|---|
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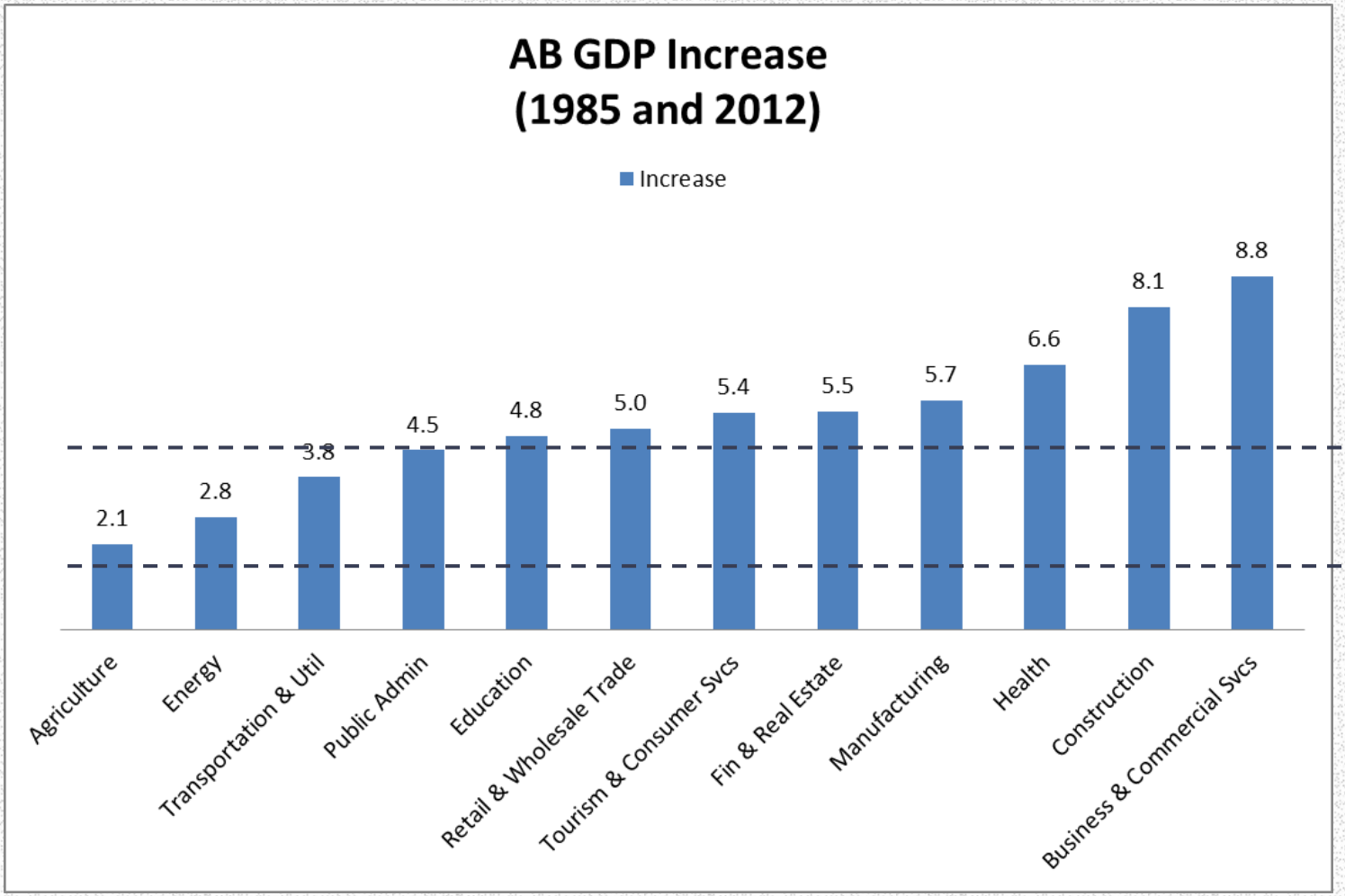
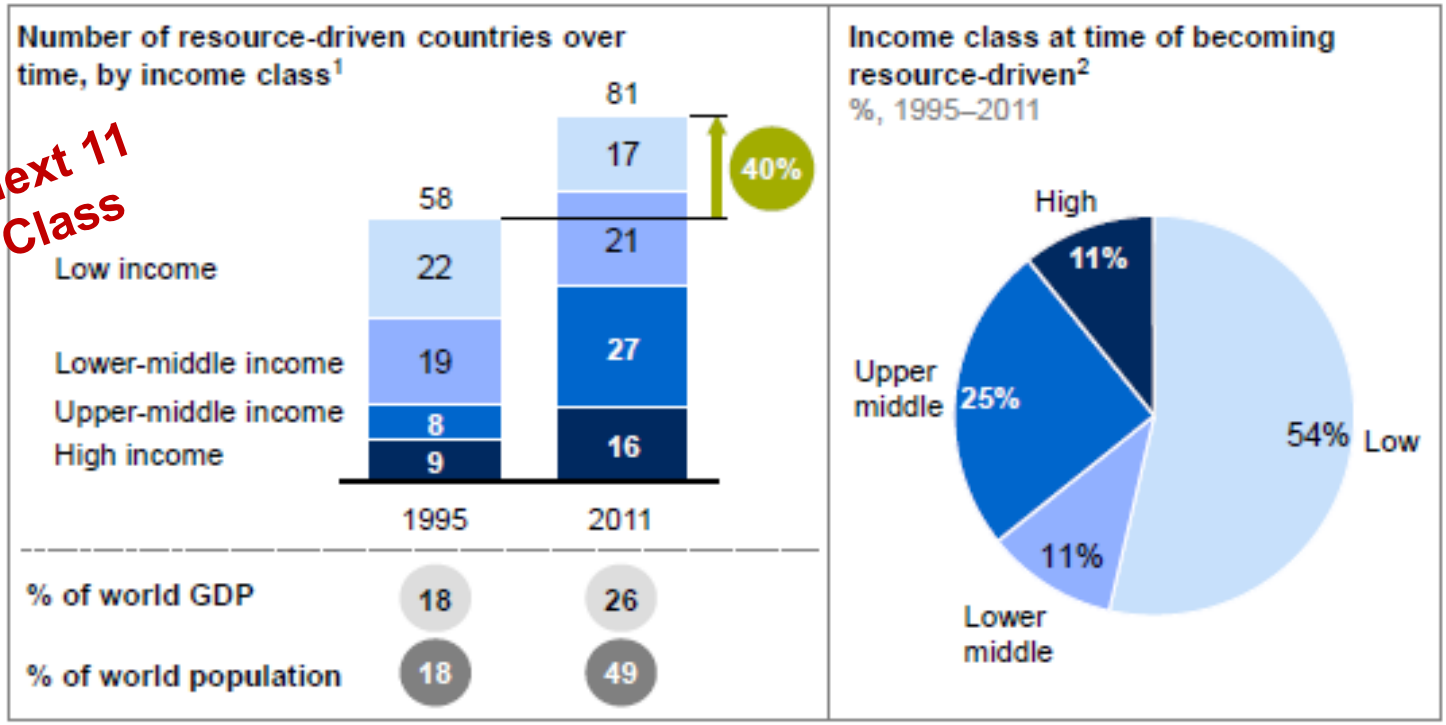



Source: June 2013 Alberta Economic Highlights – AB Enterprise and Advanced Education

## Growth Since 1985

## The number of resource-driven countries has increased by more than 40 percent since 1995, and most new ones have low average incomes

BRIC & Next 11 Middle Class




1 We define resource-driven countries using three criteria: (1) resources are more than 20 percent of exports; (2) resources are more than 20 percent of fiscal revenue; or (3) resource rents are more than 10 percent of GDP. Where data were not available, we estimated based on the nearest year's data.

2 World Bank income classifications based on per capita gross national income (GNI) by country; thresholds updated annually. In 2011, the World Bank thresholds for categorization were $1,026 for lower-middle income, $4,036 for upper-middle income, and $12,476 for high income.

NOTE: Numbers may not sum due to rounding.

SOURCE: UNCTADstat; International Monetary Fund; World Bank; IHS Global Insight; McKinsey Global Institute analysis

**Source: Reverse The Curse: Maximizing the Potential of Resource Rich Countries, McKinsey Global Institute, Dec 2013**



***Is Alberta Unique?***

## Countries performing well across the six areas of the resources value chain

| | Develop resources | | Capture value | | Transform value into long-term development | |
|---|---|---|---|---|---|---|
| | Institutions and governance | Infrastructure | Fiscal policy and competitiveness[1] | Local content development | Spending the windfall | Economic development |
| 1 | Norway | Canada | Canada | Canada | Norway | Norway |
| 2 | Canada | Malaysia | Chile | Norway | Australia | Qatar |
| 3 | Australia | Norway | Norway | Qatar | Canada | Australia |
| 4 | UAE[2] | Australia | Botswana | UAE[2] | Bahrain | Iceland |
| 5 | Chile | Lithuania | Mexico | Australia | Brazil | Canada |
| 6 | Iceland | Saudi Arabia | Australia | Iceland | Kuwait | UAE[2] |
| 7 | Qatar | Namibia | Bulgaria | Malaysia | Botswana | Israel |
| 8 | Brunei Darussalam | UAE[2] | Peru | South Africa | Colombia | Bahrain |
| 9 | Oman | Iceland | Brazil | Lithuania | Chile | Brunei Darussalam |
| 10 | Brazil | Azerbaijan | Colombia | Guatemala | South Africa | Chile |

1 Analysis restricted to mining sectors due to data availability and comparability issues. The analysis is based on country risk, access to skills, regulatory duplication, and taxation. The assessment excludes other aspects of competitiveness, such as energy and wage costs, and other regulatory barriers.
2 United Arab Emirates.
NOTE: Based on a variety of publicly available sources of information. See the appendix for further details on the methodology.
SOURCE: Revenue Watch; World Economic Forum; World Bank; United Nations Educational, Scientific and Cultural Organization; UN Human Development Report; Yale Environmental Performance Index; Fraser Institute; Morningstar; International Monetary Fund; International Budget Partnership; McKinsey Global Institute analysis

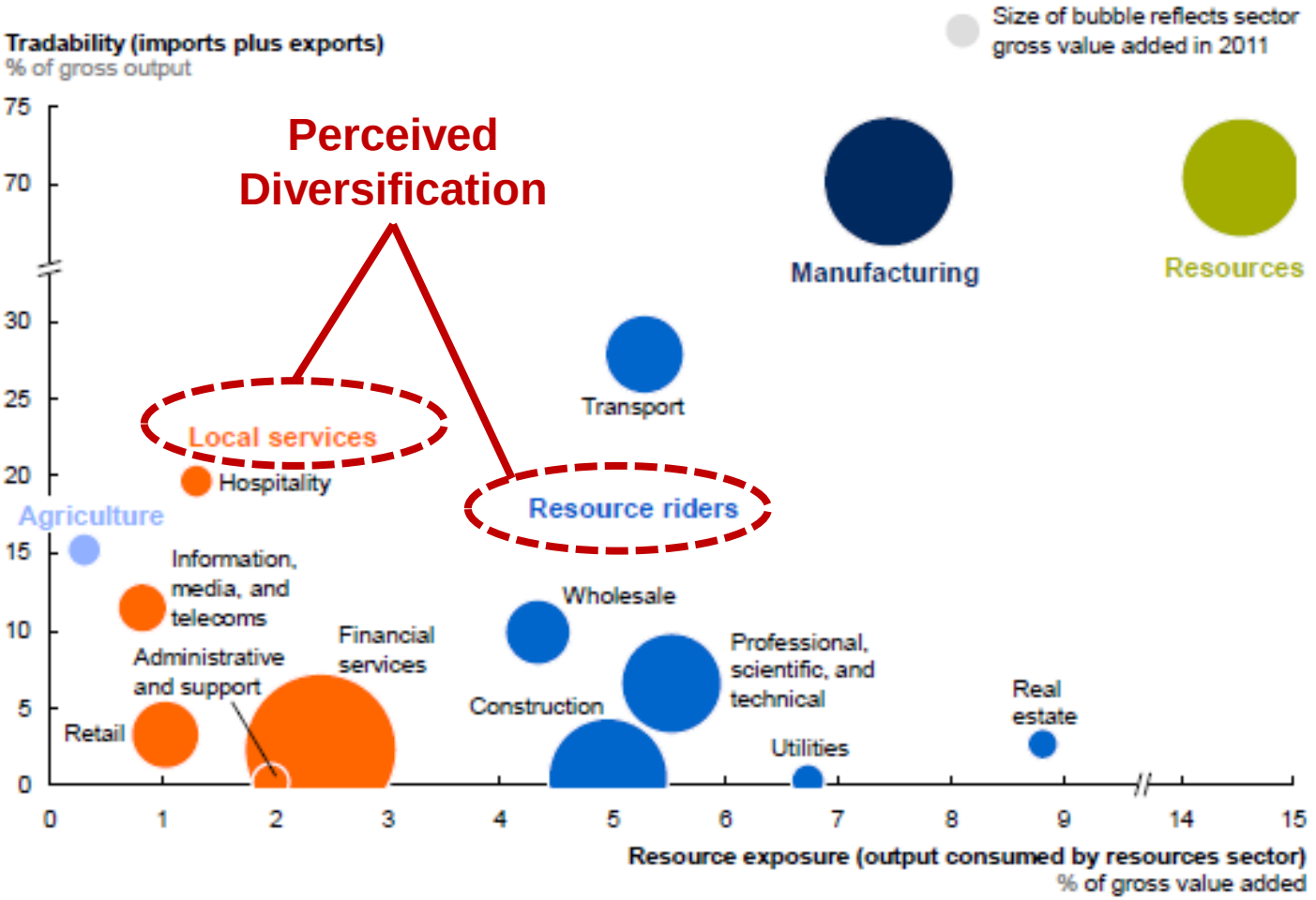
**Source: Reverse The Curse: Maximizing the Potential of Resource Rich Countries, McKinsey Global Institute, Dec 2013**



***How Does Canada Perform?***

## Previous MGI research finds that it is important to identify clusters of sectors based on their exposure to resources

AUSTRALIA EXAMPLE




SOURCE: *Beyond the boom: Australia's productivity imperative*, McKinsey Global Institute, 2012; McKinsey Global Institute analysis

**Source: Reverse The Curse: Maximizing the Potential of Resource Rich Countries, McKinsey Global Institute, Dec 2013**



***Resource Riders & Local Services Not Diversification – Platform Maybe***

## Alberta of Yesterday

Agriculture
Forestry
Tourism

## Alberta of Today

Crude/Extracted Petroleum
Petrochemicals
Manufacturing
Agriculture
Forestry
Tourism
Advanced Technologies
Local Svcs / Resource Riders

**Local Services**
Fin Services
Info, Media, Telecom
Hospitality
Retail
Health / Public Admin
Education

**Resource Riders**
Transportation
Construction
Utilities
Prof, Science, Tech
Real Estate

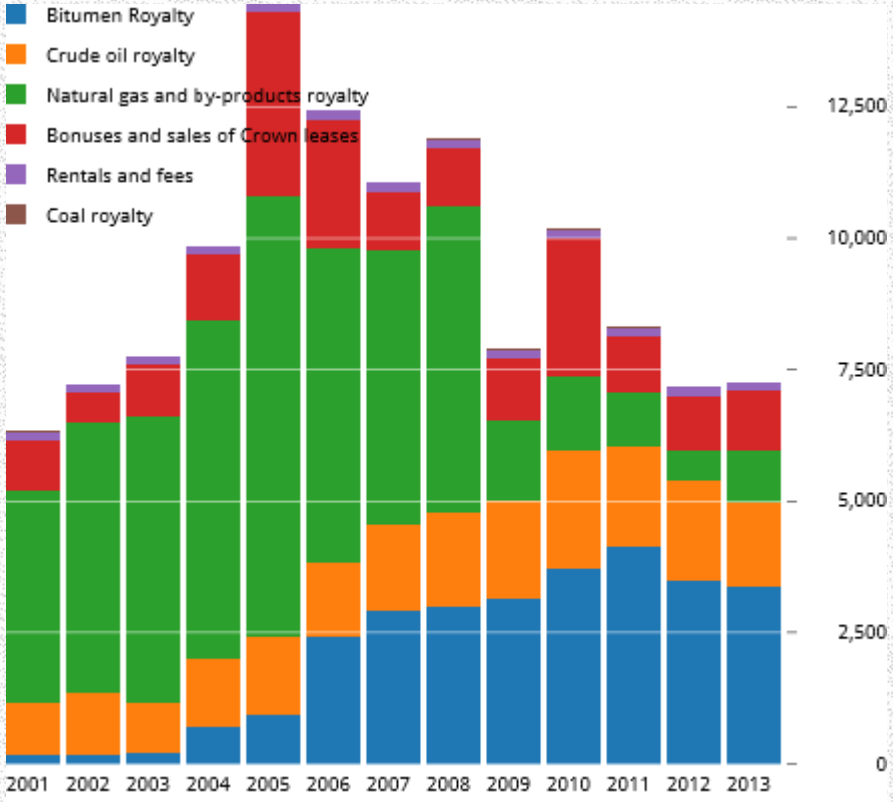
## Alberta of Tomorrow

Extracted Petroleum
Diversified Value Add
Diversified High Tech
Manufacturing
Agriculture / Forestry
Tourism
Local Svcs / Resource Riders

**Grow More?**
**Stall or Diversify?**
**Visionary Initiatives?**

*Alberta Past / Present / Future*

**Fishery Decline (Maritimes)** → **Forestry Decline (Broad)** → **Auto Decline (Ontario)** → **Non Renewable Resource Decline (Alberta)** → **Natural Gas Potash (West/North)**




**Rare Earth Metals**

**Electrification**

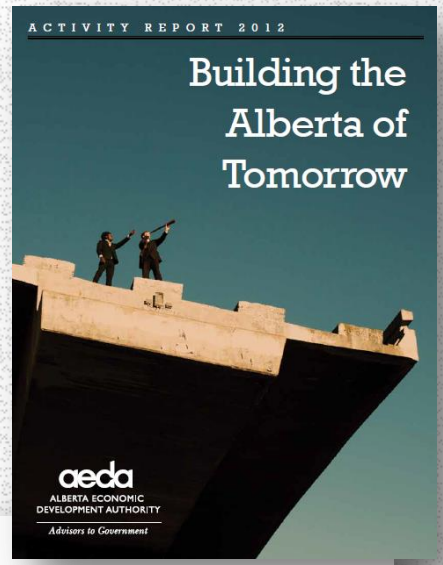
**Diversified Value Add Resource Industries**

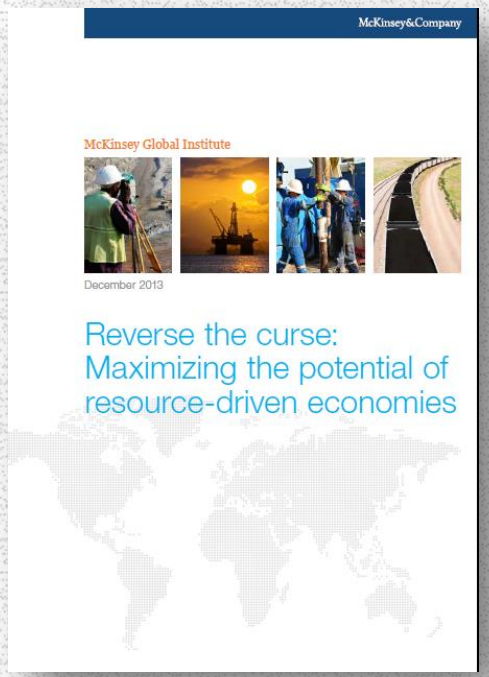
**Diversified High Tech**

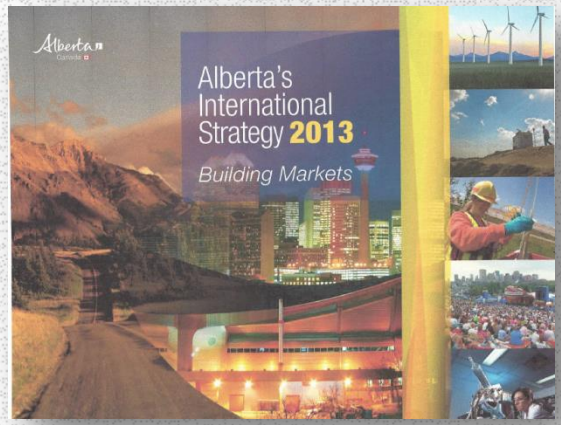
**Gateway To North**

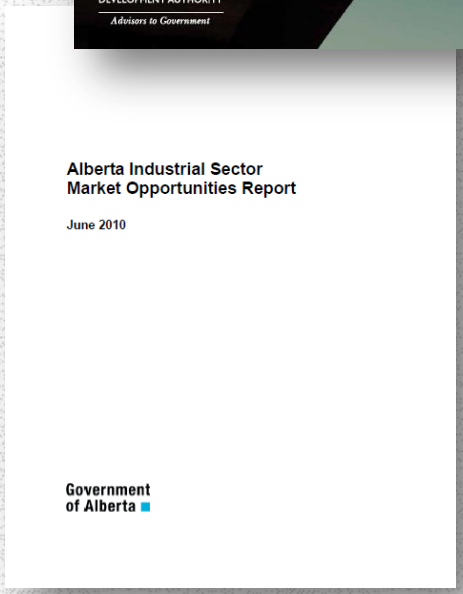
Source: Graham Thomson, Edmonton Journal, 7 Jan 14.

***Prosperity In Post Boom Alberta? History Tells Us Won't Continue Forever***

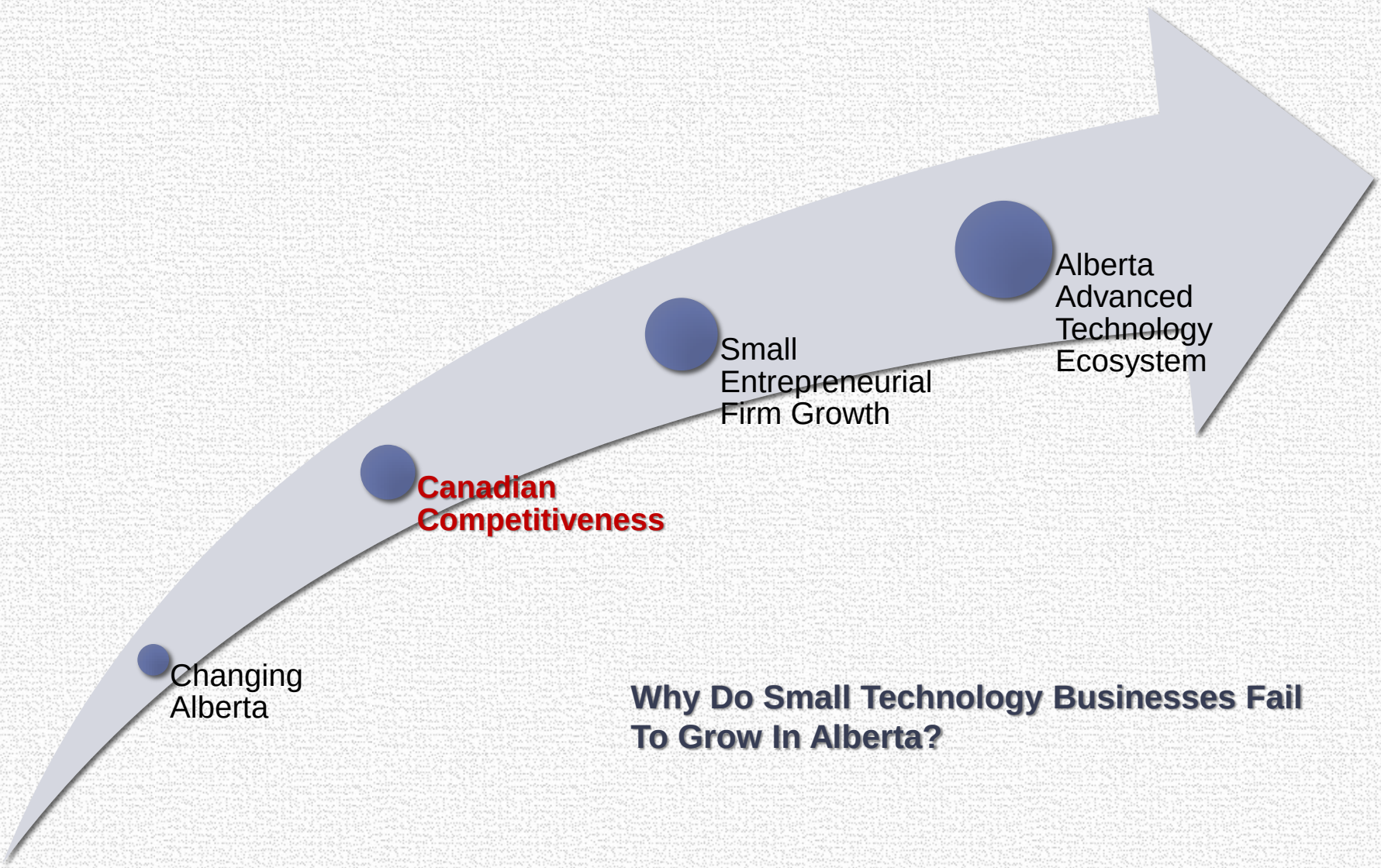



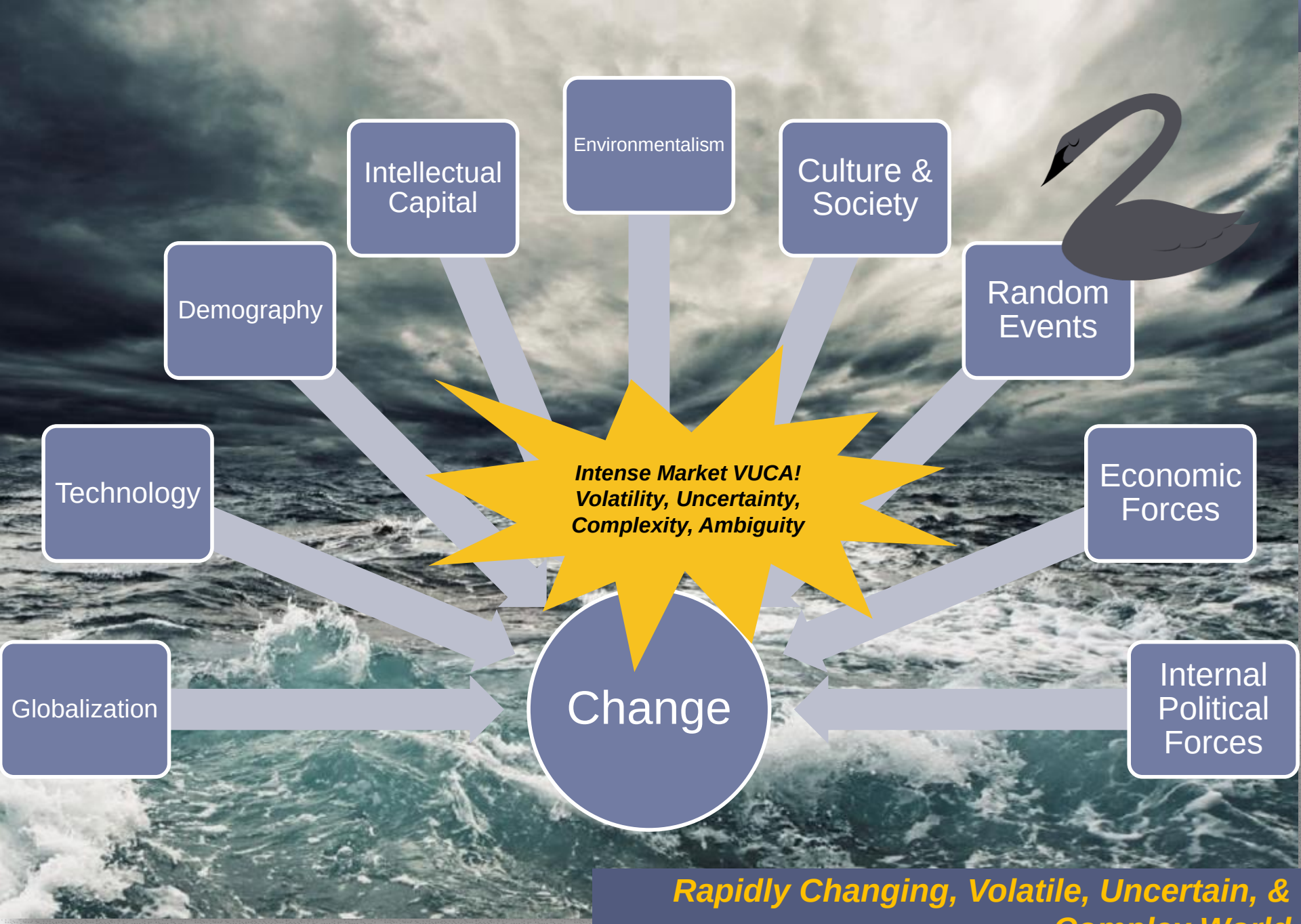




## Useful Publications




**Why Do Small Technology Businesses Fail To Grow In Alberta?**

***Canadian Competitiveness***

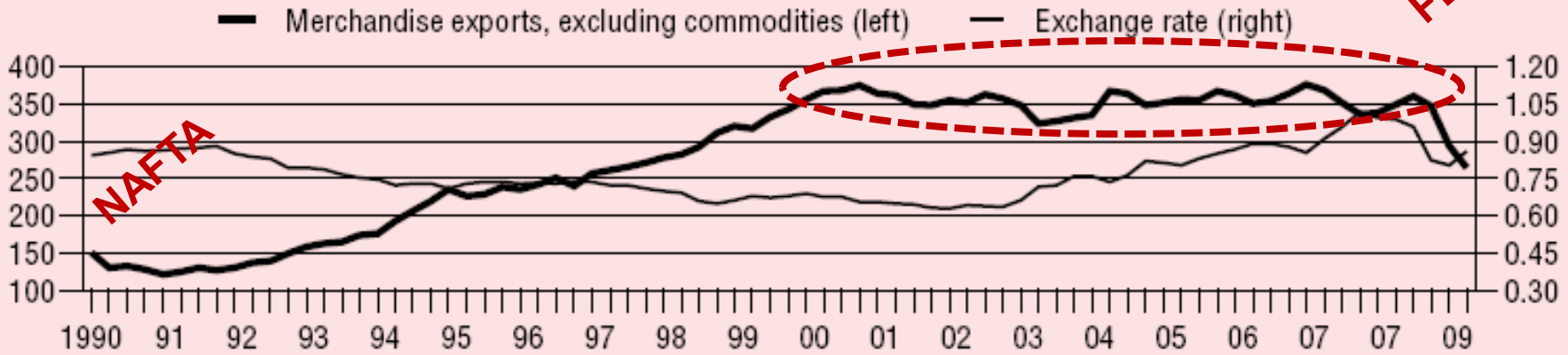



***Rapidly Changing, Volatile, Uncertain, & Complex World***

## Stronger Dollar Contributes to Lower Merchandise Exports

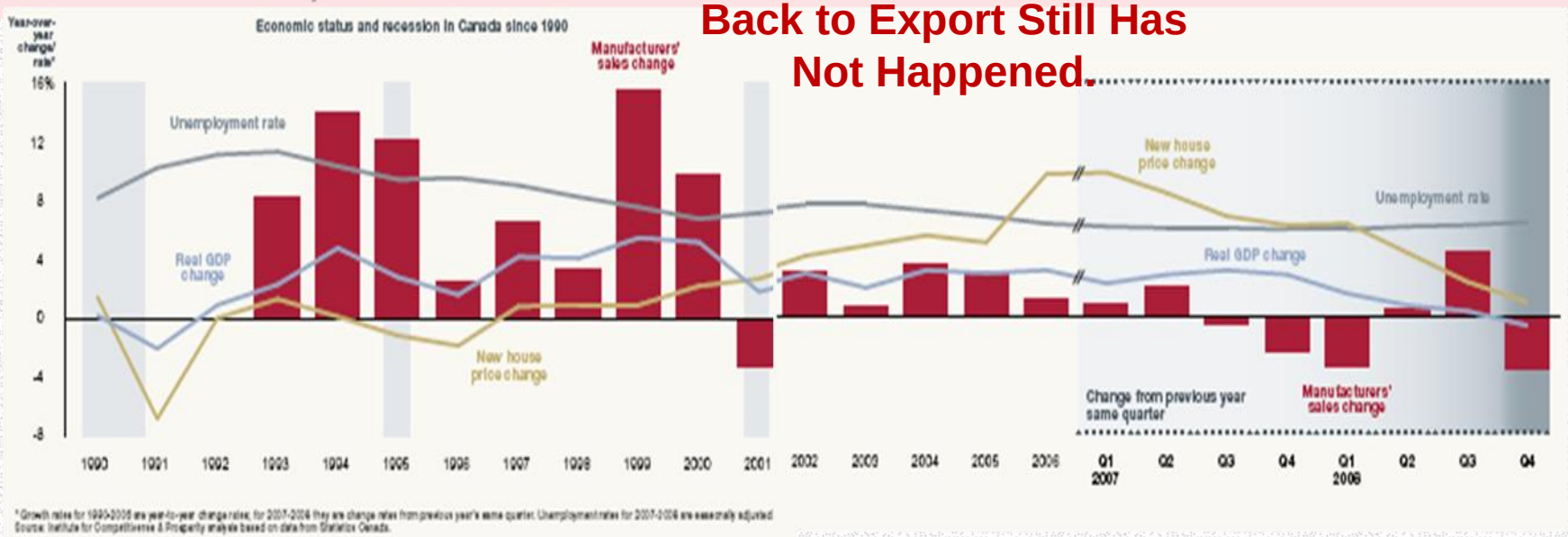
(exports, $ billions—left; exchange rate, US$/C$—right)

**75-80% Canada's GDP Export Driven**



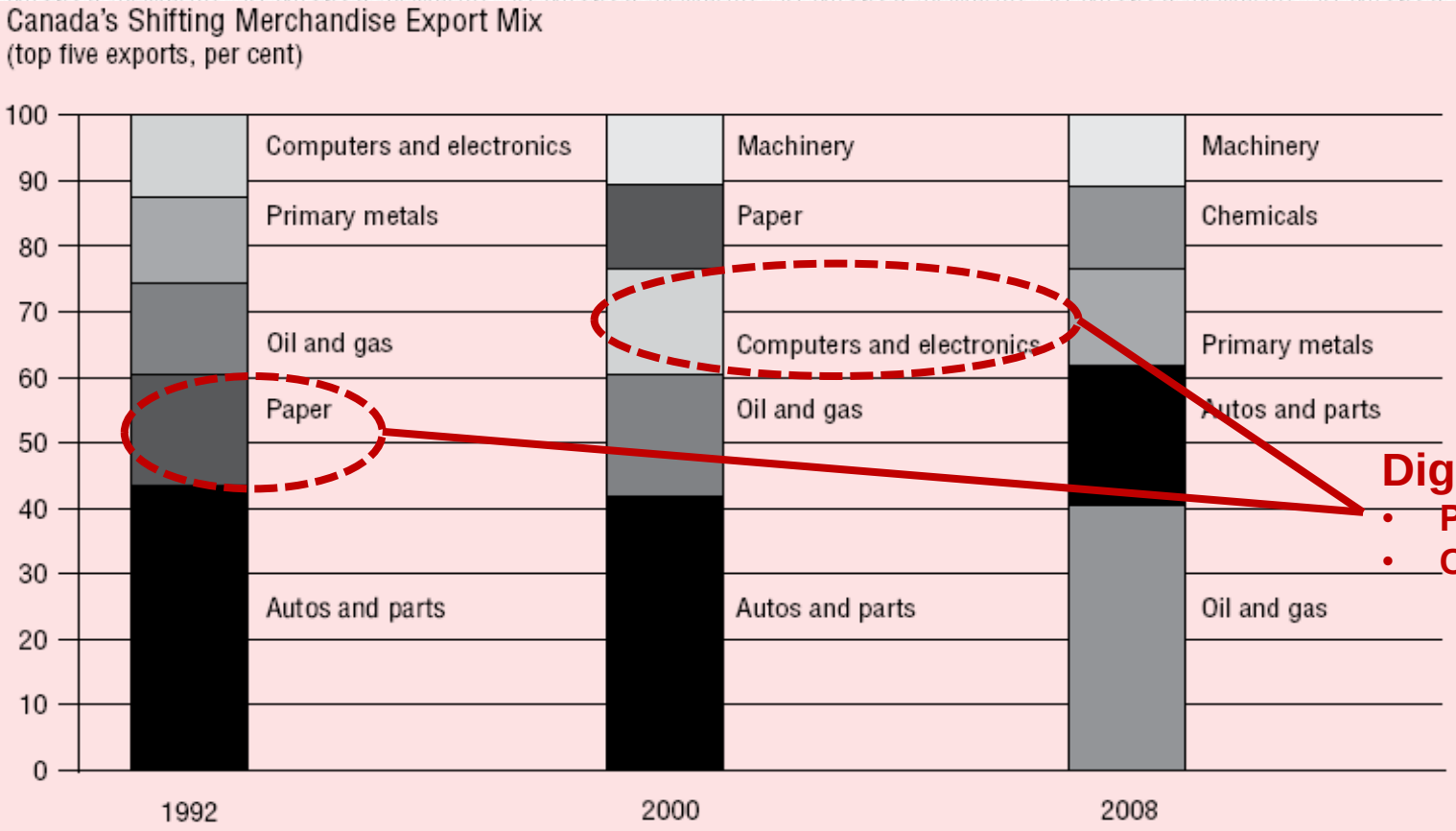

Sources: Statistics Canada; The Conference Board of Canada.

**In 2014 Rotation Back to Export Still Has Not Happened.**




MPI. (2009). *Opportunity in the turmoil.* Toronto: Institute for Competitiveness & Prosperity - Martin Prosperity Institute.

***NAFTA Reached Maximum Impact by 2000***
***Drive For More Trade Agreements***



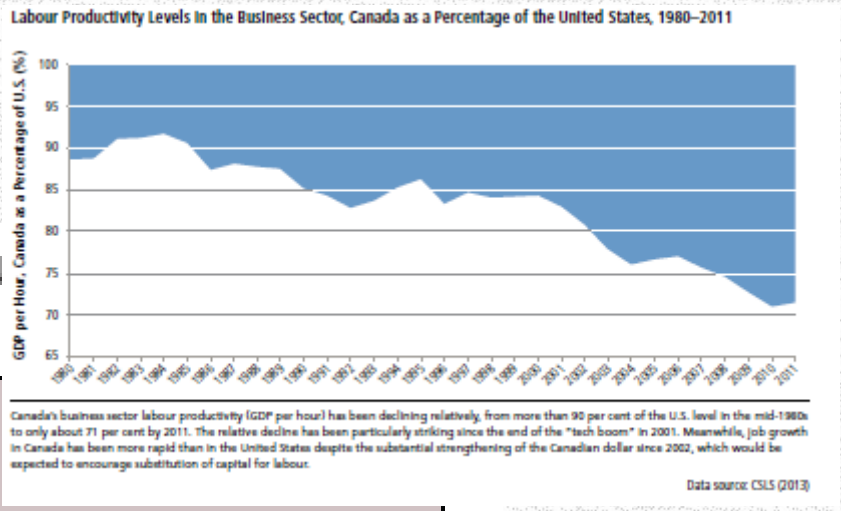

**Digital Economy:**

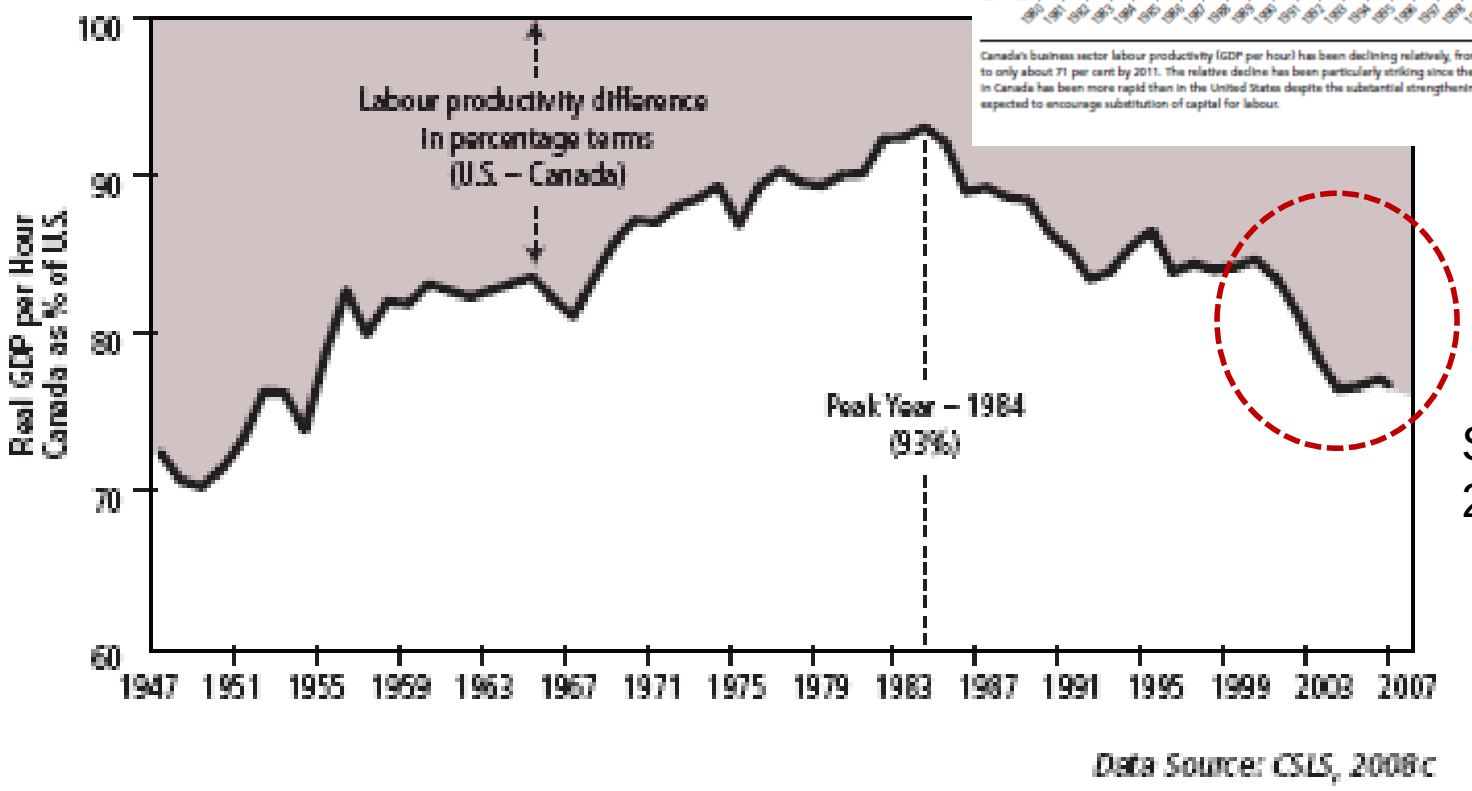
- **Paper↓** √
- **Comp & Elec↓** **?**

Sources: Industry Canada; The Conference Board of Canada.

Park-Shannon, A. (2010). *Re-Energizing Canada's International Trade: Strategies for Post-Recession Success.* Ottawa: The Conference Board of Canada.

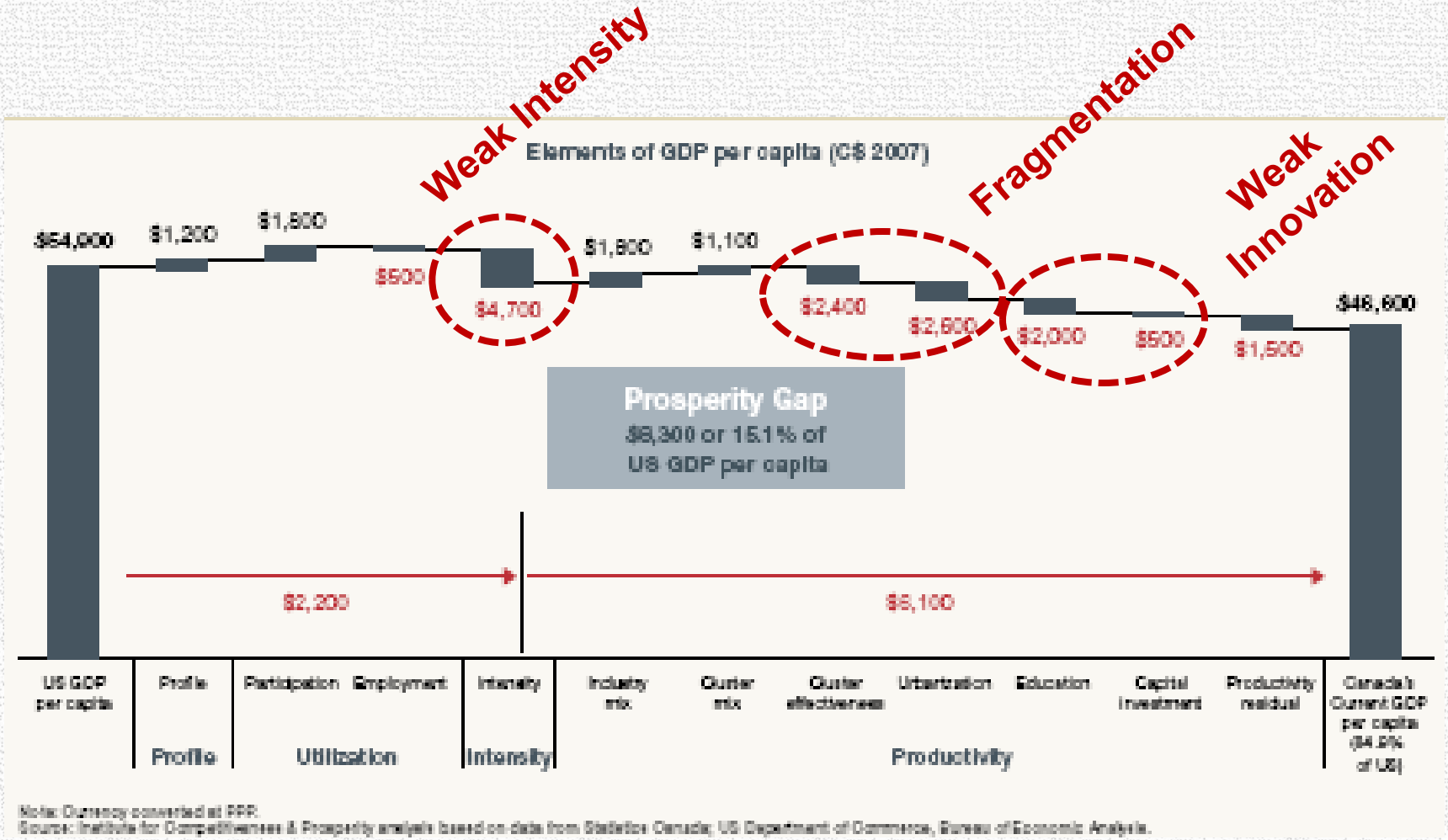
***Canada's Merchandise / Commodity Export Shift – Big Pivot!***




Since 2000

## Canada's Productivity Problem

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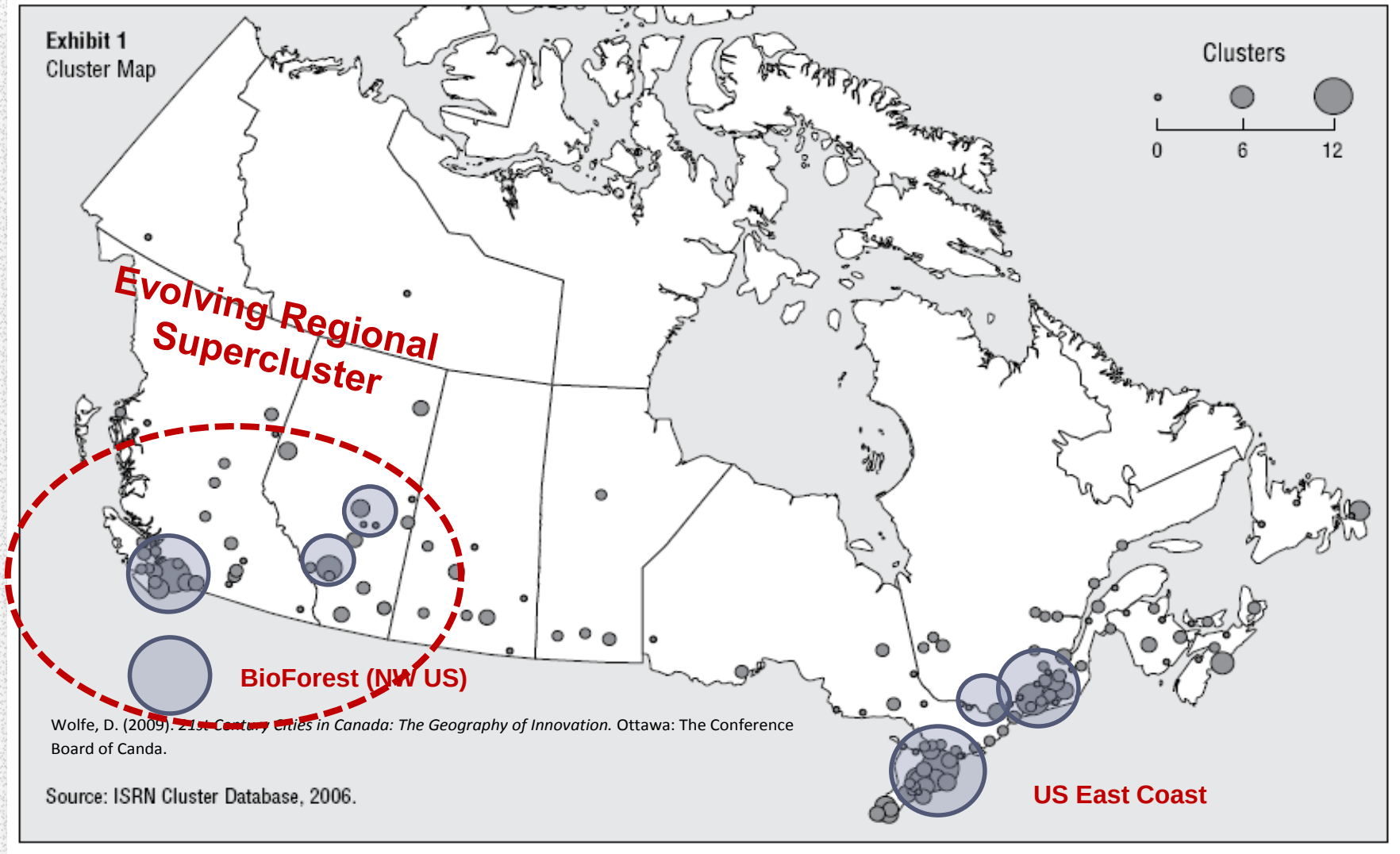
**Canada's Productivity Problem**



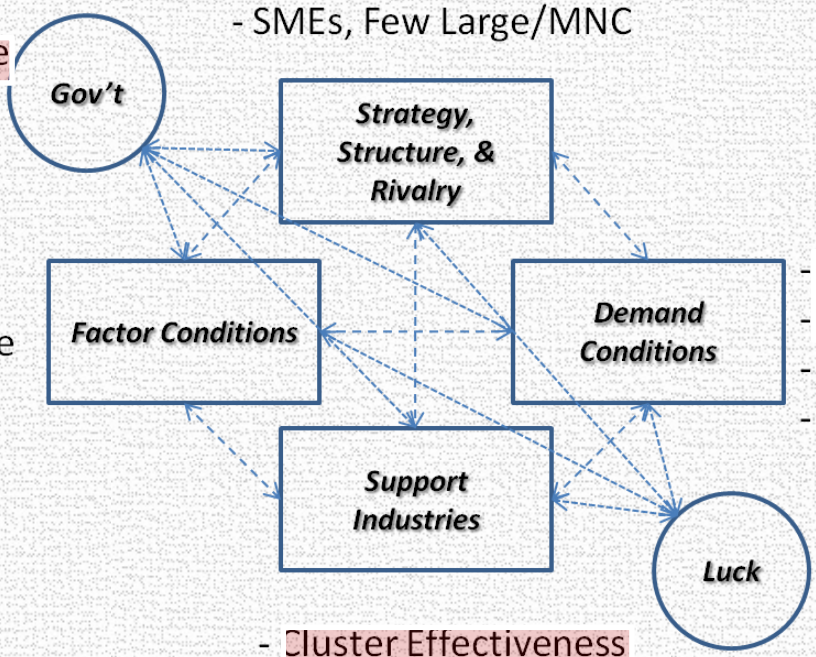

Wolfe, D. (2009). *21st Century Cities in Canada: The Geography of Innovation.* Ottawa: The Conference Board of Canda.

## *Canada's National Clusters Two Different Economies & Creative Cities*

+ good
- bad
↑ improving
↓ degrading

- Low Ambition
- Low Propensity For Innovation
+Diverse Economy
- Low Local Rivalry
- Low R&D Investment
- Foreign Control In Tech Intensive Sectors
- SMEs, Few Large/MNC

- Business Investment↑
- Tax Rates↑
- Regulatory Burden↑
+ SR&ED
-Protectionism
-Interprovincial Trade
-Structural Deficit↓




+Natural Resource
+Universities
+High Quality People
+Cultural Diversity
+Infrastructure
- Demographics↓

- Low Competitive Intensity
- Small Population
- Regional Fragmentation
- 'Up-stream' Suppliers

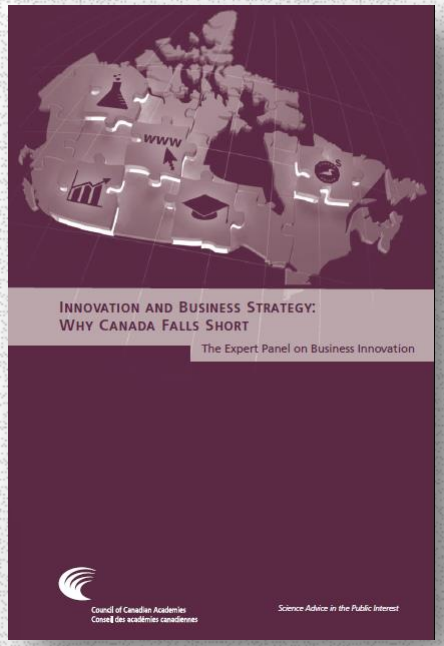
Resource Blessing
Proximity to US

- Cluster Effectiveness
+ Financial System↑

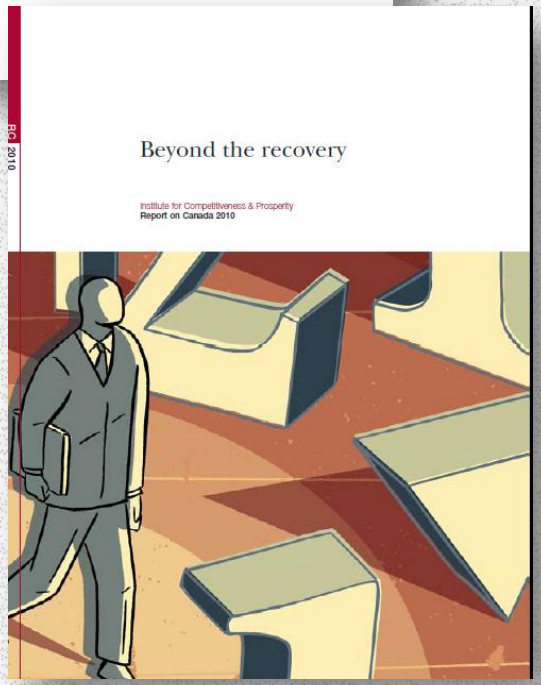
+ Natural Endowments
+ Stability
+ Freedom From Conflict↓
+ Proximity To US↓
- Knowledge Commercialization

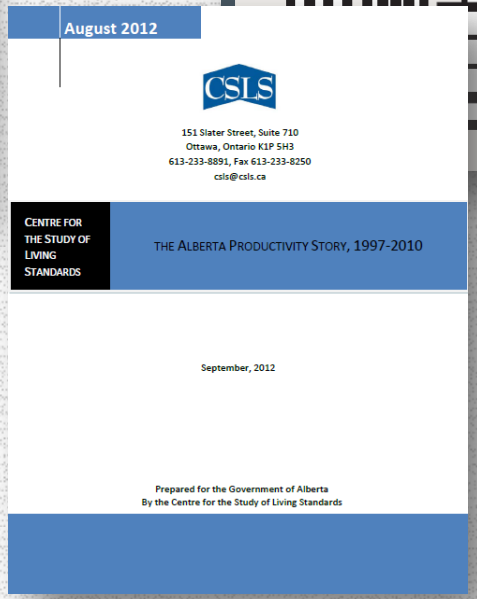
# Porter's National Diamond Model

*Canada's National Competitiveness*

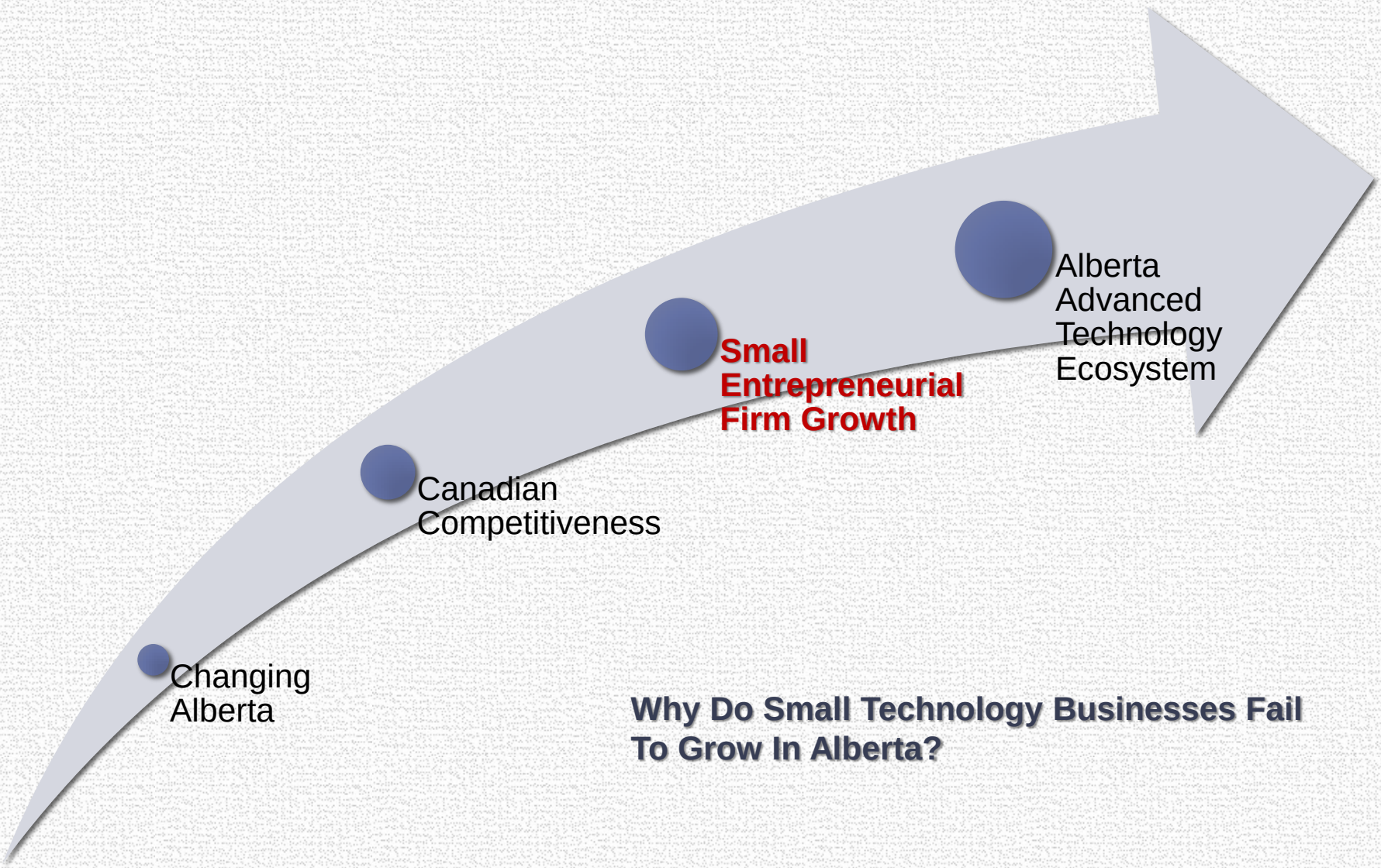








## Useful Publications

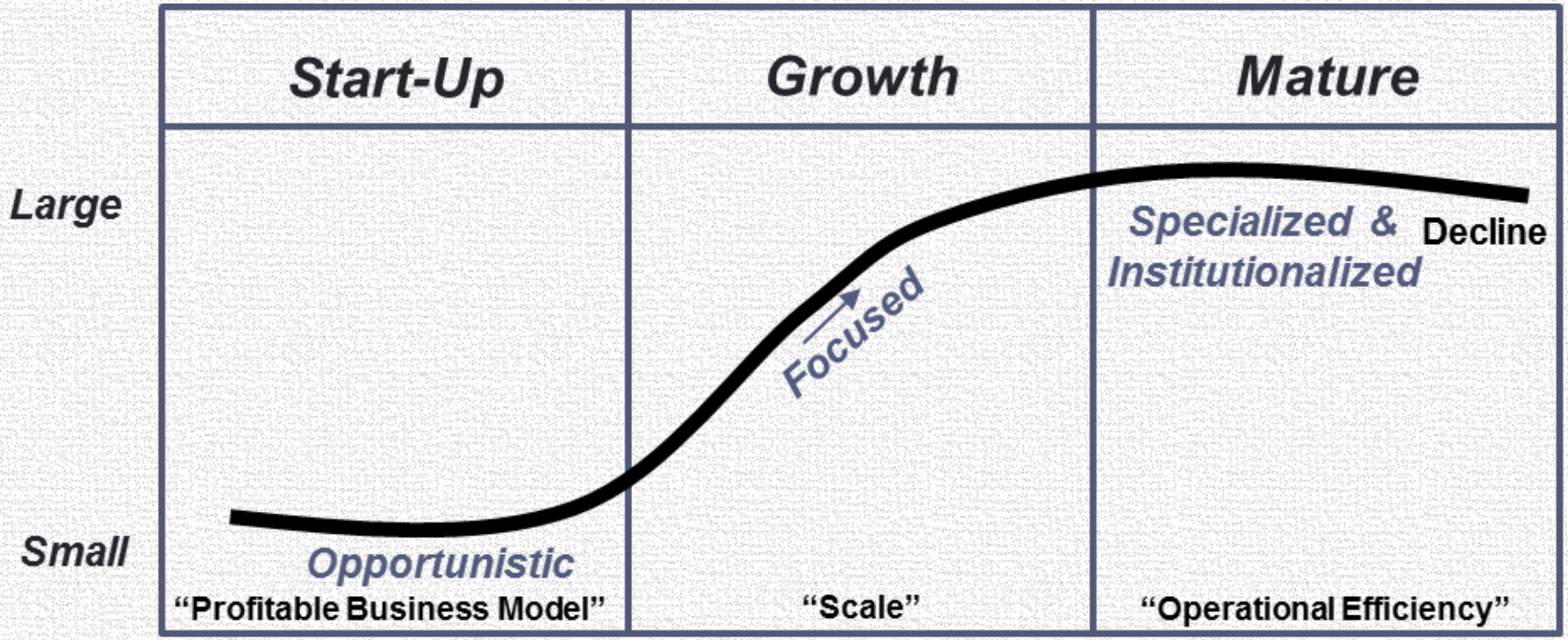



**Why Do Small Technology Businesses Fail To Grow In Alberta?**

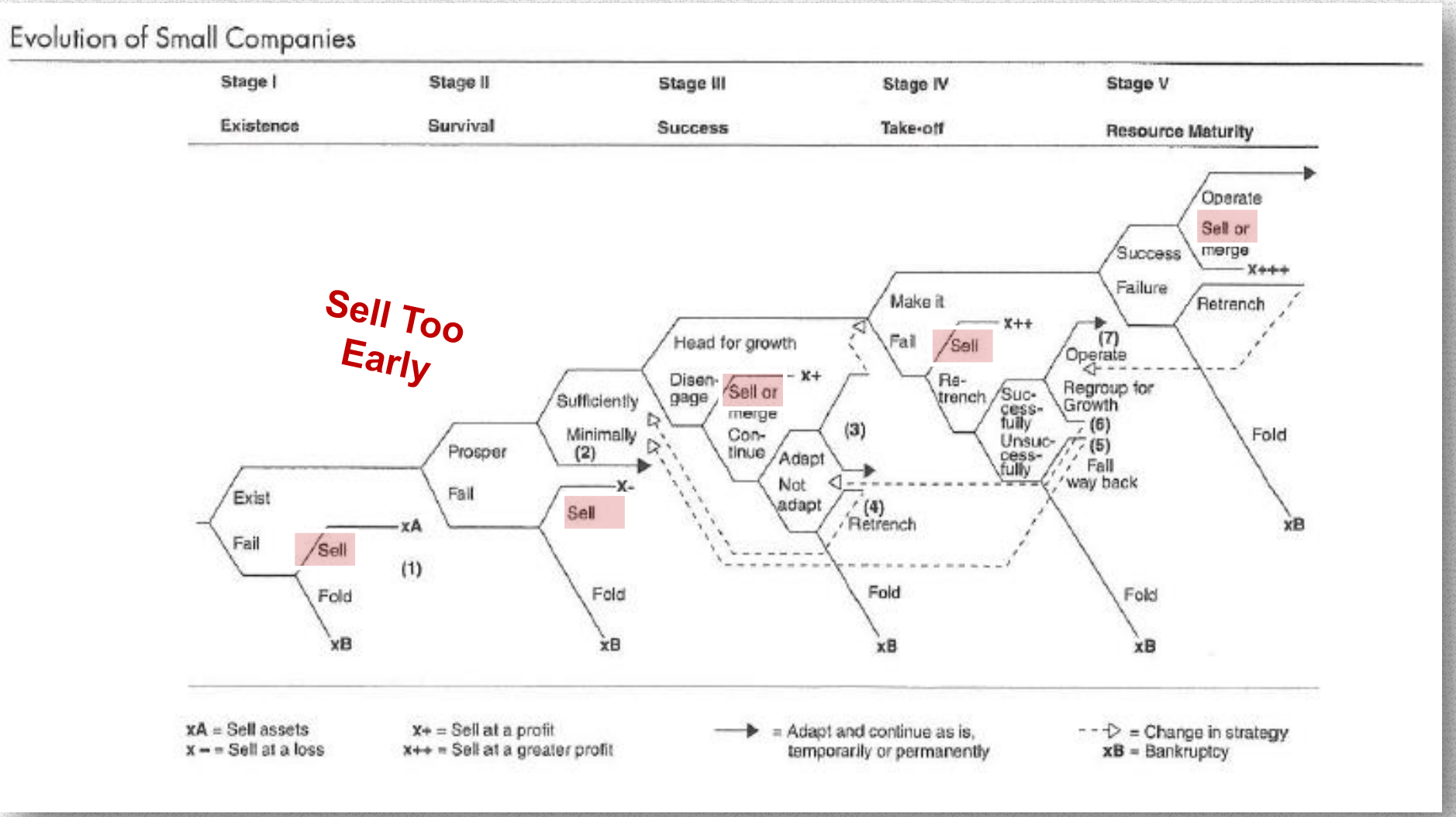
***Small Entrepreneurial Firm Growth***

## Growth:

1. More New Customers (Local Anchors → Geographic Expansion)
2. Sell More To Existing Customers
3. High Price From Higher Value (Innovation Not Local High Cost Structure)




Firm Growth Curve - Ideal




**Churchill & Lewis, *Five Stages of Business Growth*, HBR, 1983.**

## *Firm Growth Curve - Reality*

## SME DISTRIBUTION

| Size of Firm | # of Firms | % of Firms |
|---|---|---|
| Micro (1-4 employees) | 615,599 | 54.9% |
| Small (5-99 employees) | 485,180 | 43.2% |
| Medium (100-499 employees) | 18,999 | 1.7% |
| Large (500+ employees) | 2,528 | 0.2% |
| TOTAL | 1,122,306 | 100.0% |

*Statistics Canada, Business Register, December 2011. Excludes enterprises without employees.*

**~4,000 Public Firms**

| SME Distribution by Region | % SME | % Population |
|---|---|---|
| Newfoundland & Labrador | 1.5% | 1.5% |
| Nova Scotia | 2.7% | 2.8% |
| Prince Edward Island | 0.5% | 0.4% |
| New Brunswick | 2.3% | 2.2% |
| Quebec | 21.8% | 23.6% |
| Ontario | 35.0% | 38.4% |
| Manitoba | 3.3% | 3.6% |
| Saskatchewan | 3.5% | 3.1% |
| Alberta | 13.6% | 10.9% |
| British Columbia | 15.5% | 13.1% |
| Nunavut / NWT / Yukon | 0.3% | 0.3% |

**SME%<Pop% Mature Firms**

**SME%>Pop% Younger Firms**

*Statistics Canada, Business Register, December 2011 and Census 2011.*

**BDC, *SMEs at a Glance*, Aug 2011.**

**AB 2012**
59%
39.2%
1.6%
0.2%

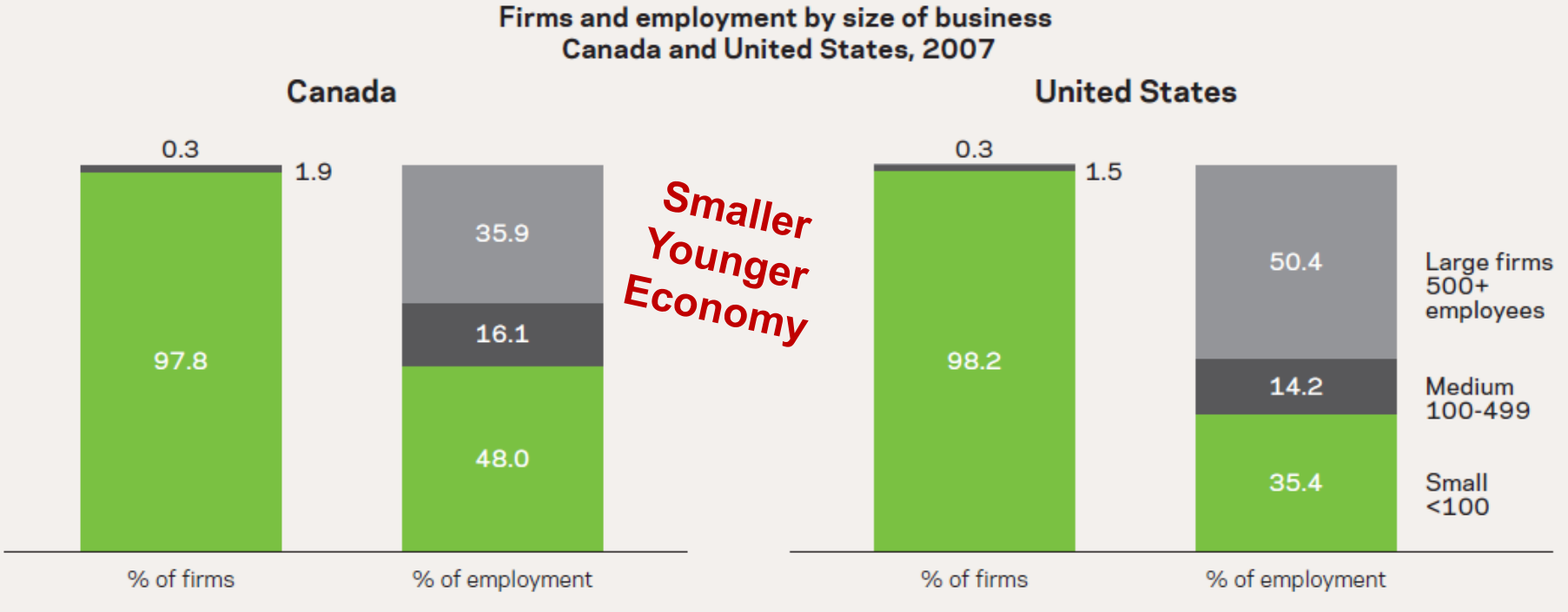
**Between 2007 and 2010, 527 medium firms exited the economy (↓3.6%).**

**In 2012, 1.6% of all firms were medium but contributed 12% GDP and 16% jobs.**

**Medium Firms are:**

- **More Productive**
- **Hire More**
- **More Clout on International Stage**
- **Invest More in R&D**

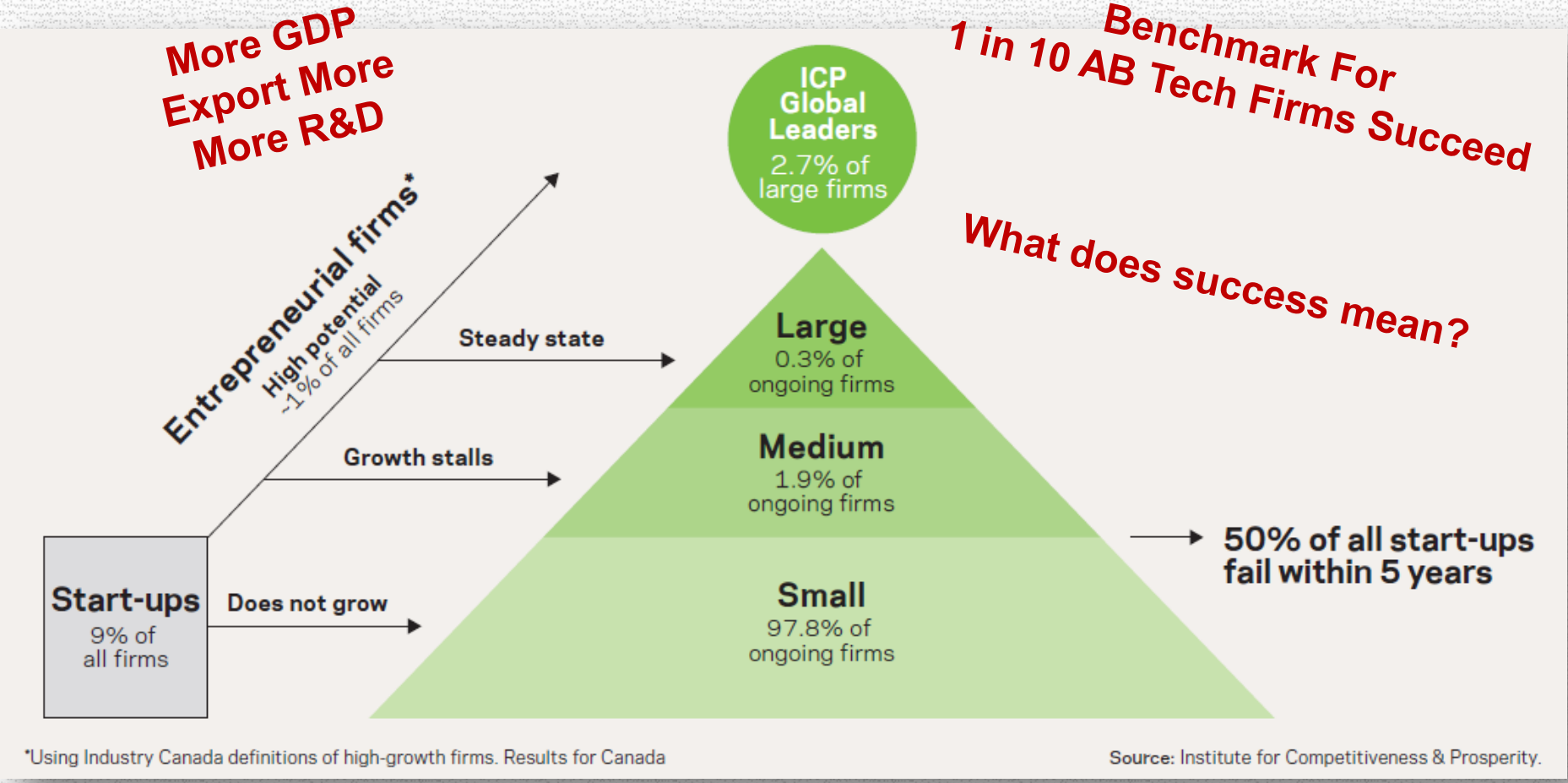
***AB Is Not Different – Just Younger***
***Why Do We Care? We Need More Medium Firms***




**Note:** US data based on firms, Canadian data based on establishment counts.
**Source:** Institute for Competitiveness & Prosperity analysis based on data from Industry Canada, Key Small Business Statistics (July 2008), Statistics Canada, US Bureau of Labor Statistics and the US Small Business Administration.

**Institute for Competitiveness & Prosperity, *Small Business Entrepreneurship & Innovation*, WP15, Feb 2012.**

## *Firm Size Mix Comparison*




Institute for Competitiveness & Prosperity, *Small Business Entrepreneurship & Innovation*, WP15, Feb 2012.

## *Entrepreneurial vs Small Businesses*

| 1995 | 2003 | 2009 | 2010 |
|---|---|---|---|
| 15 Companies | 40 Companies | 46 Companies | 42 Companies |


**Source: Institute for Competitiveness & Prosperity, *Canada's Innovation Imperative*, 2011.**

***Canada's Global Leaders ($1B+)***

West

Lower Value Add (Less Tech Intensive)

Upstream

Downstream

East

Higher Value Add (More Tech Intensive)


Resolute FP
Agrium
Barrick Gold
Comeco
Canfor
Tech Resources

Methenex
Potash Corp
Samuel & Sons
West Fraser Timber

Catalyst Paper
Cott
Tembec

CCL Industries
Celestica
CINRAM
Dorel
Gilden Activewear
Linamar
McCain
Husky Injection Molding

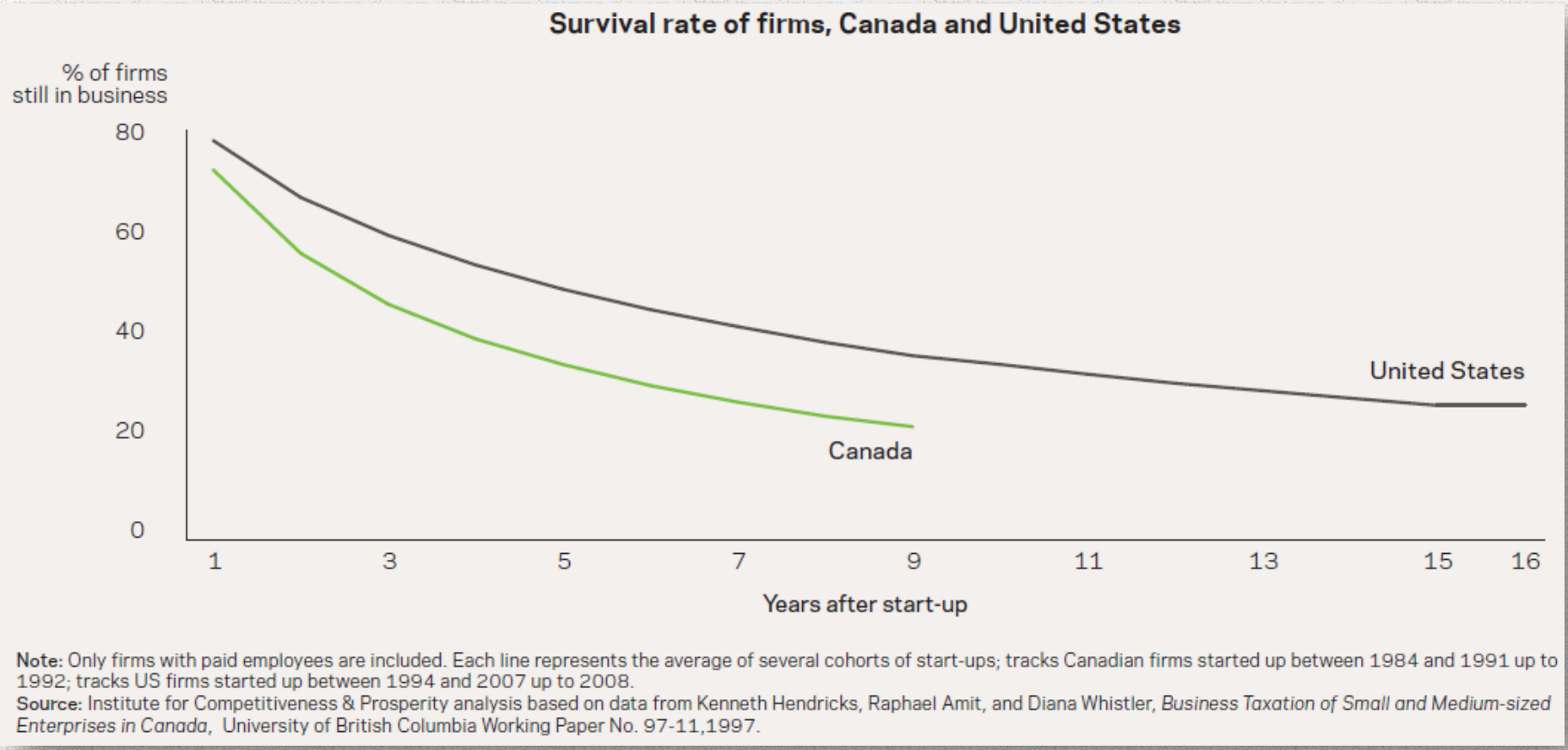
Magna

Blackberry
Bombardier
CAE
SNC Lavalin
Aldo Group

<u>B2B / B2C Services</u>
RBC
TD Waterhouse
ATCO
Brookfield Asset Mgmt
CN Rail
First Services Corp
Garda World
Manulife Finance
Thomson Reuters

Finning International
Russel Metals
Viterra
Couche Tard
Transat AT

***How Do Canadian Global Leaders Position Along Value Chain?***




**Note:** Only firms with paid employees are included. Each line represents the average of several cohorts of start-ups; tracks Canadian firms started up between 1984 and 1991 up to 1992; tracks US firms started up between 1994 and 2007 up to 2008.
**Source:** Institute for Competitiveness & Prosperity analysis based on data from Kenneth Hendricks, Raphael Amit, and Diana Whistler, *Business Taxation of Small and Medium-sized Enterprises in Canada*, University of British Columbia Working Paper No. 97-11,1997.

**Institute for Competitiveness & Prosperity, *Small Business Entrepreneurship & Innovation*, WP15, Feb 2012.**

***Canadian Start-Up Survival Rate Less Than US***

## Leadership

**Lack of Growth Ambition**
Risk Adversity
**'Life-Style' Company Preference**
Management Experience
Entrepreneurialism

## Domestic Economy

Small Domestic Market
**Regional/Size Structure**
**'Branch-Plant' Effects**
**Down-Stream Value Chain Emphasis**
Canadian M&A Activity
International Competition
Strong Canadian Dollar

## Finance

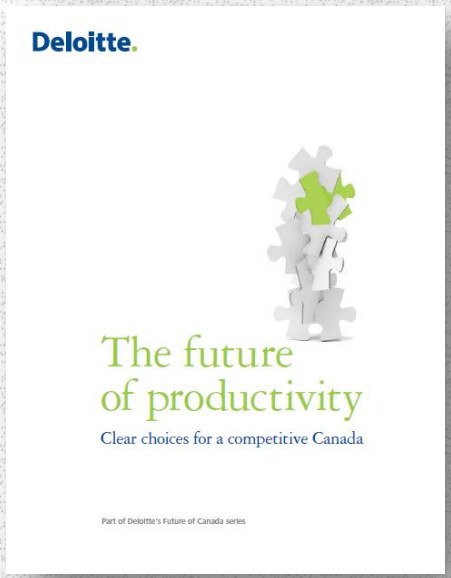
**VC Quality & Quantity**
Inability To Raise Capital For Medium Firms
**Investor Liquidity Influences**

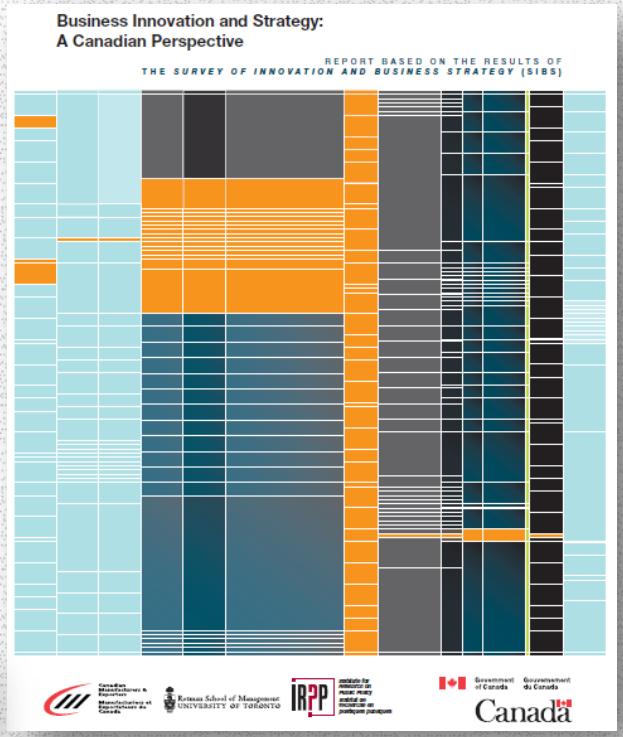
## Geopolitical

Tax Policy Somehow Disadvantaging Growth
Three Levels of Government
Proximity to US
Distance From Export Markets
**Land Locked**

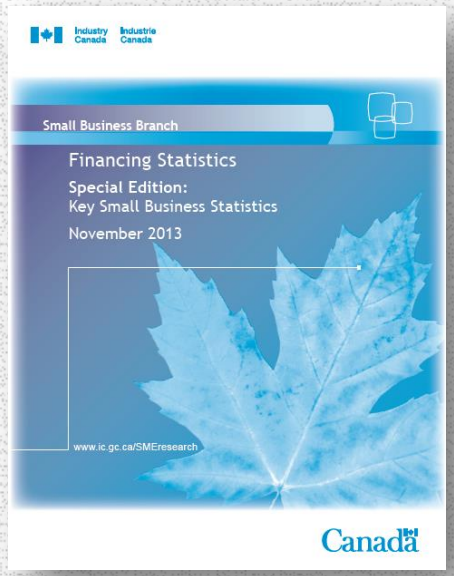
**Any Unique or More Prevalent In Alberta?**

***Common Reasons Cited For Poor Business Growth In Canada & Alberta***

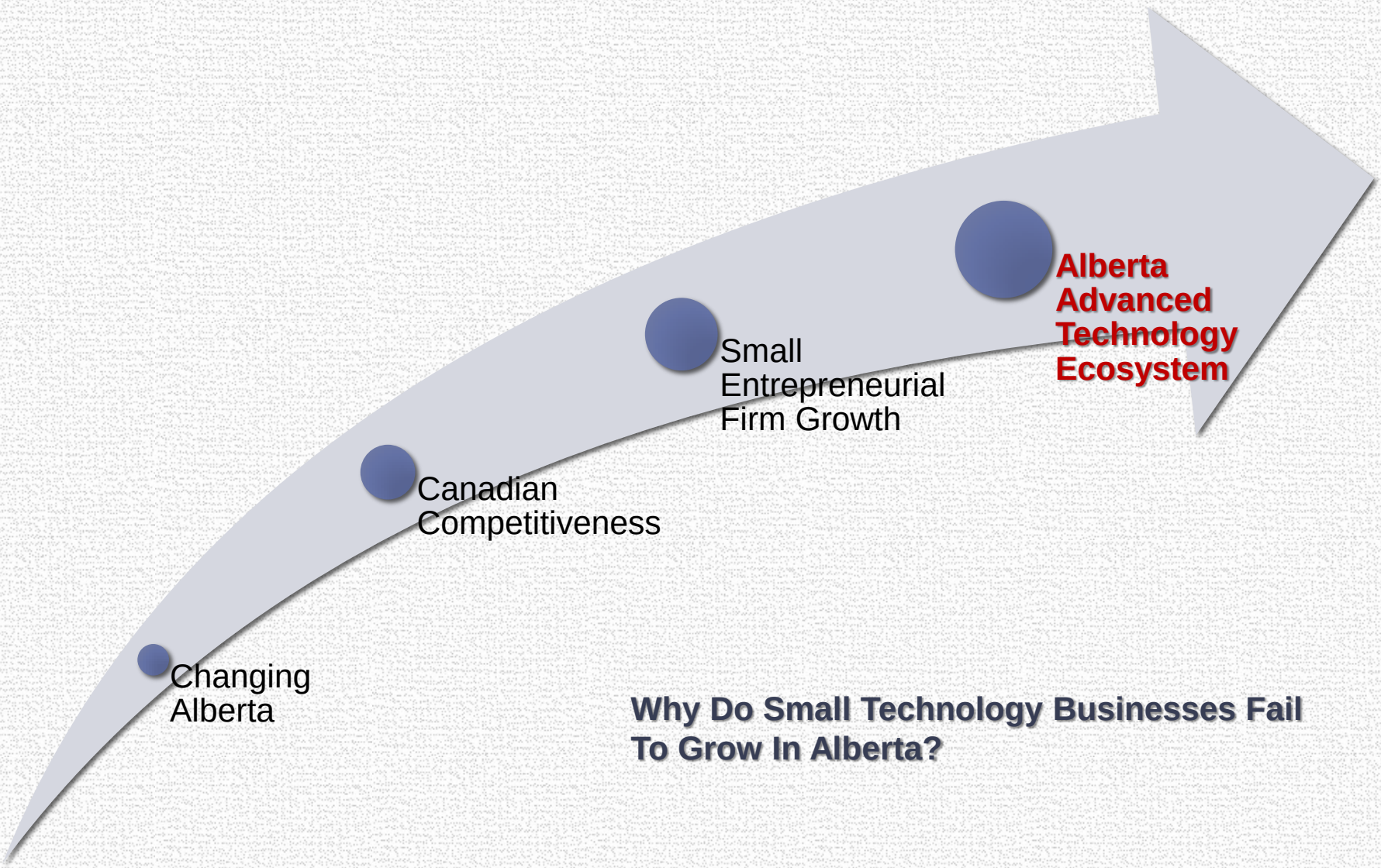







## Useful Publications




**Why Do Small Technology Businesses Fail To Grow In Alberta?**

***Alberta Advanced Technology Ecosystem***

- No Alberta Based High Technology Firm Has Achieved $1B – Highly Fragmented Industry Sectors
- Many Tech Start-Ups Leave Alberta To Grow
- Preference For 'Product That Comes From The Ground' – Can Be Controlled & Owned, Can't Leave Easily
- No Diversification Sense of Urgency
- Alberta Technology Industry 'Rounding Error on GDP'
- University Spinoff Performance Has Been Poor:
  - <10 Spinoffs Per Year
  - University Royalties $6.5M in 2007
- Most Tech Oriented University Grads Leave The Province

***Alberta Technology Industries - Perceptions***

## High Tech
-Aircraft & Spacecraft
-Pharmaceuticals
-Office and Computing
-Telecomm
-Medical, Precision, Optical Instruments

## Medium Low Tech
-Ship Building & Repair
-Rubber & Plastic Products
-Coke, Refined Petroleum Products
-Non-metallic Mineral Products
-Basic Metals and Fabricated Metal Products

## Medium High Tech
-Electrical Machinery & Apparatus
-Motor Vehicles, Trailers
-Chemicals
-Railroad & Transport Equipment
-Machinery & Equipment

## Low Tech
-Manufacturing
-Wood, Pulp, Paper
-Printing & Publishing
-Food Products & Beverages
-Textiles, Leather, Footwear

OECD Technology Industry Definitions

-Alberta IndustrySectors

***What Is A Technology Firm?***

High Tech
Med High Tech
Med Low Tech

**ICT**

$10B+ Revenues (‘13)
4,500 Firms (‘13)
60,000 Employees (‘13)

↔

**Biotechnology**

$1.5B+ Revenues (‘11)
200+ Firms (’11)
16,400 Employees (‘11)

↑

**Aerospace & Defence**

$1.2B+ Revenues (‘07)
170 Firms (‘07)
3,500 Employees (‘07)

↓

**Nascent**

NanoMEMS
Automation
Fusion Energy

↔

**Cleantech/Environmental**

$4.3B+ Revenues (‘07)
1,330 Firms (’04)
37,000 Employees (‘07)

↑

**Chemical (Value Add)**

$30.3B+ Revenues (‘08)
150 Firms (‘08)
12,000 Employees (‘08)

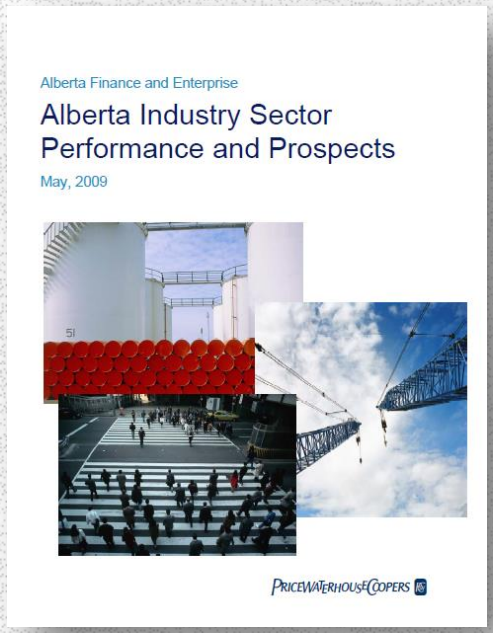
↑

**Manufacturing**

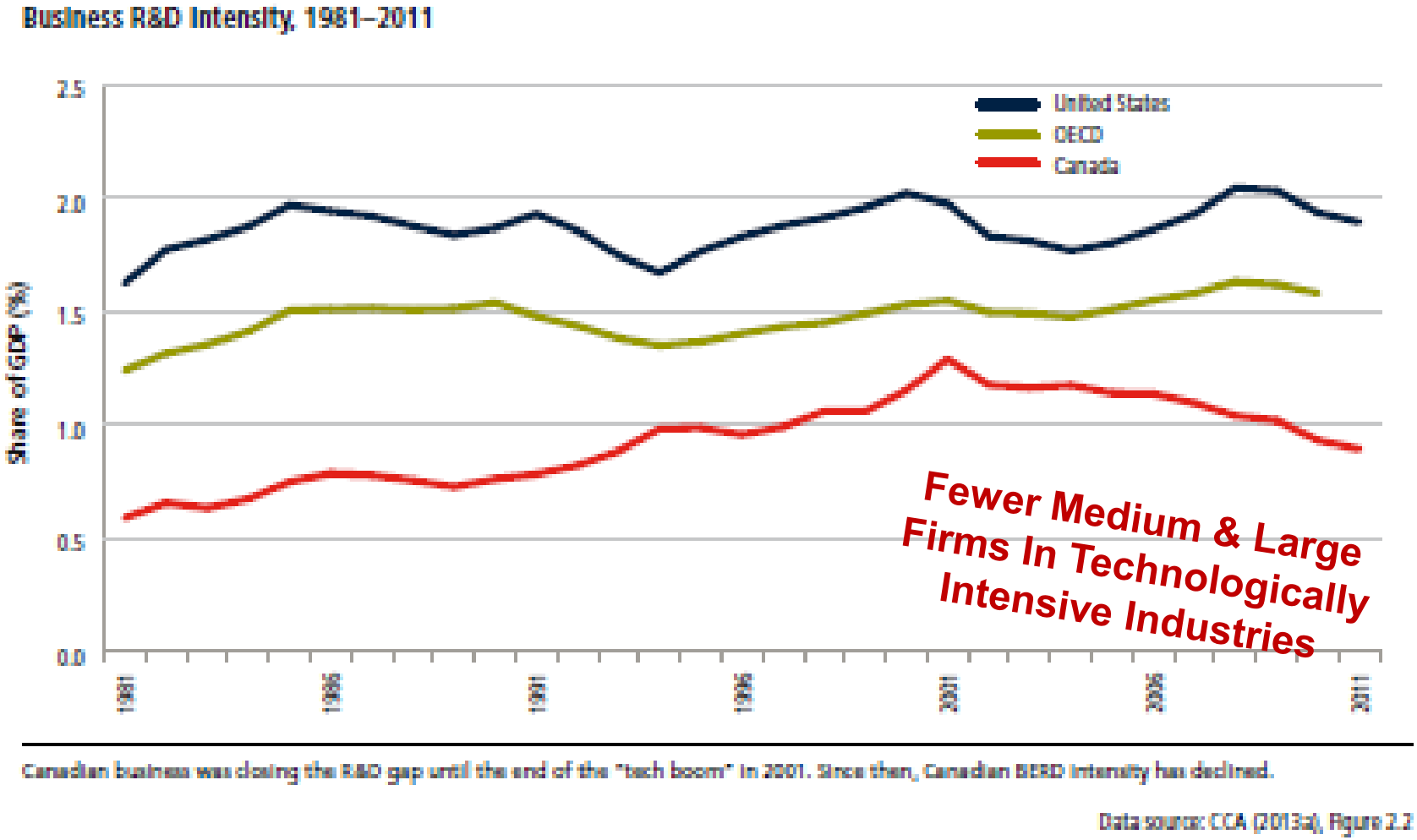
$4.3B+ Revenues (‘07)
1,330 Firms (’04)
141,400 Employees (‘12)

↑

**Weak Industry Sector Data & Interpretation**




## *Alberta Technology Industry Sectors*



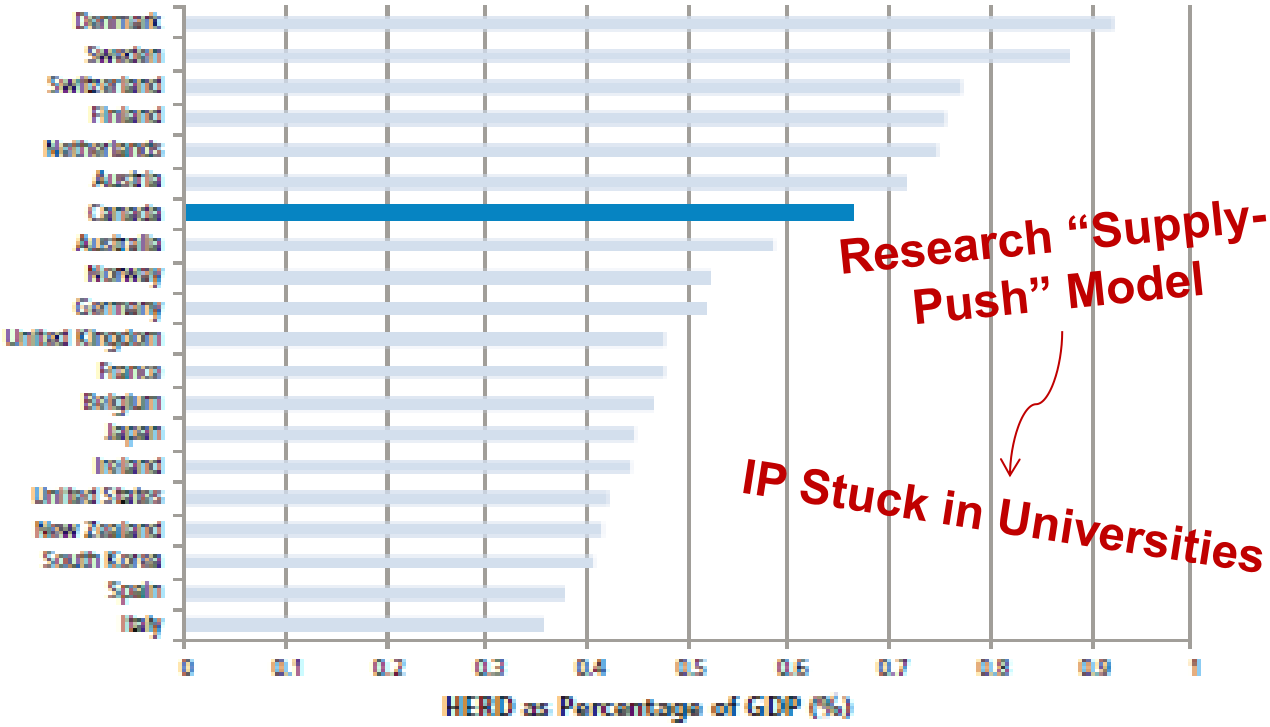

Council of Canadian Academies, *Paradox Lost: Explaining Canada's Research Strength and Innovation Weakness*, 2013.

**Business R&D Intensity Continues To Be Weak in Canada**

# *Canada outlier in research spending at universities vs private & public research labs. Canadian firms underspend on R&D. How research commercialized by universities & provincial labs very relevant.*

*Exhibit 2.1*

**Expenditure on Higher Education R&D (HERD), 2011**



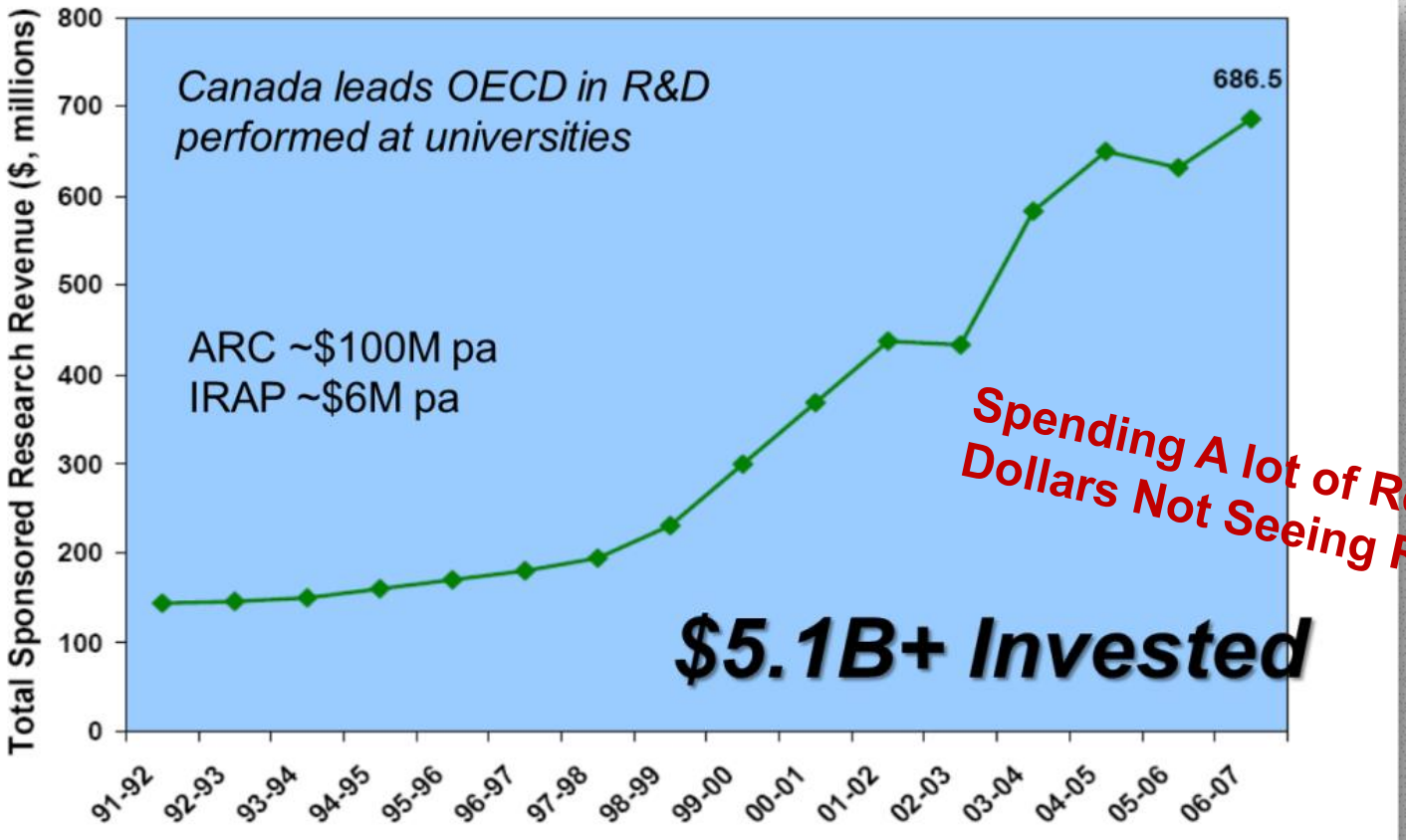

| | Average Annual Growth 2006–2011(%) |
|---|---|
| Denmark | 9.6 |
| Sweden | 6.6 |
| Switzerland | 8.2 |
| Finland | 5.8 |
| Netherlands | 6.4 |
| Austria | 7.2 |
| Canada | 3.5 |
| Australia | 10.8 |
| Norway | 7.7 |
| Germany | 7.3 |
| United Kingdom | 3.6 |
| France | 5.5 |
| Belgium | 6.5 |
| Japan | -0.8 |
| Ireland | 3.2 |
| United States | 5.2 |
| New Zealand | 6.4 |
| South Korea | 13.1 |
| Spain | 4.2 |
| Italy | 2.1 |

Canada regularly ranks high among spenders on R&D carried out in higher education institutions. But the trend in Canada's HERD intensity (HERD as a percentage of GDP) has been approximately flat since 2006. Average annual growth rates are in national currencies; 2006–2011 or latest available year.

Data source: OECD (2013) and Advisory Group calculations.

Council of Canadian Academies, *Paradox Lost: Explaining Canada's Research Strength and Innovation Weakness*, 2013.

## *Higher Education R&D Expenditures And Commercialization Performance*

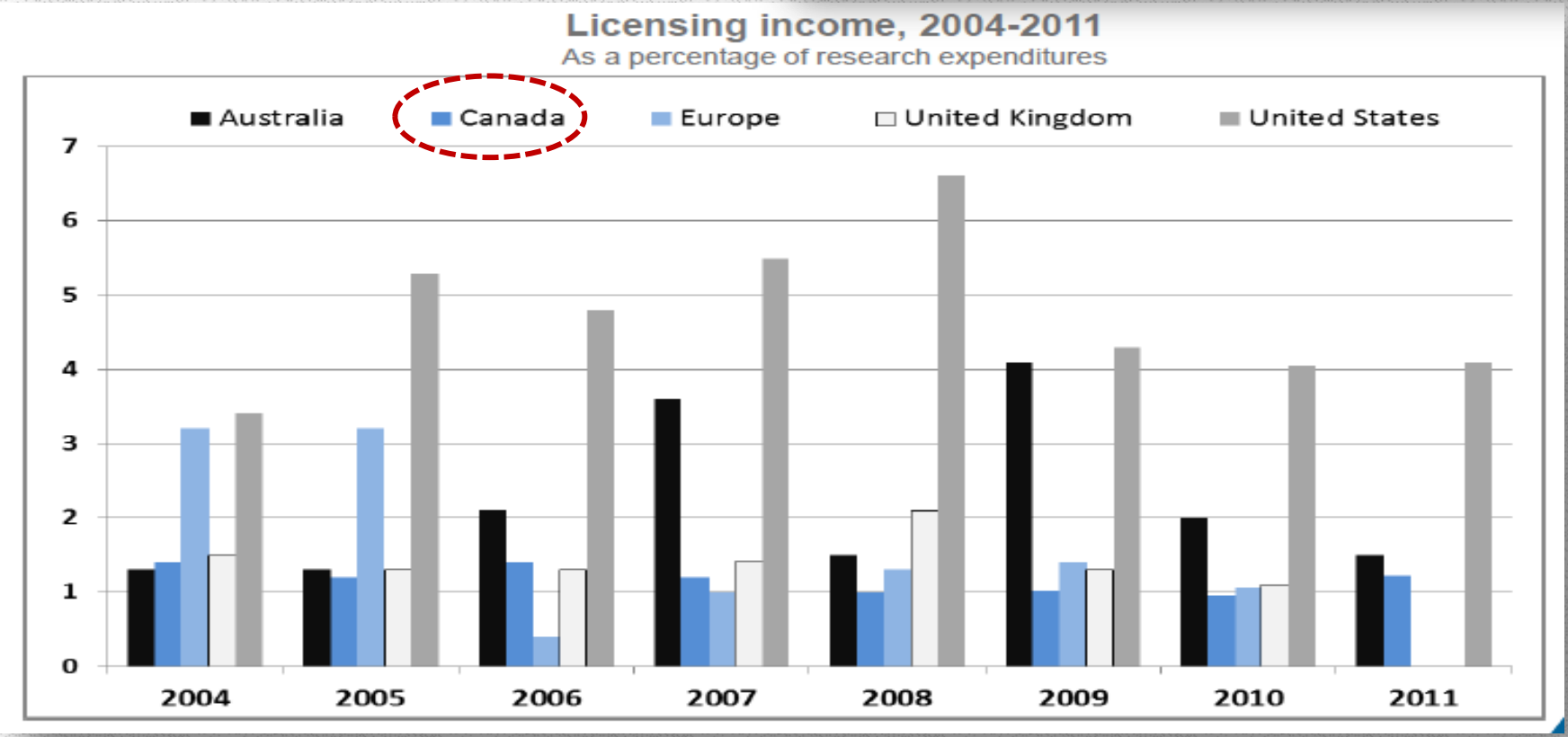



Sources: The University of Alberta, Research Services Office; the University of Calgary, Research Services and Research Accounting; the University of Lethbridge, Financial Services; Athabasca University, Office of the Vice-President, Academic.

**Spending A lot of Research Dollars Not Seeing Returns**

***Rapid Increase In Research Funding To Alberta Universities***

- **Limits in policies**: narrow focus on patenting, with little understanding of the broader determinants ("what should I do with my patents?")
- **Governance and incentives**: Technology Transfer Offices often lack capabilities (size, skills, incentives)
- **The knowledge produced** by public research is not always relevant to commercialisation.

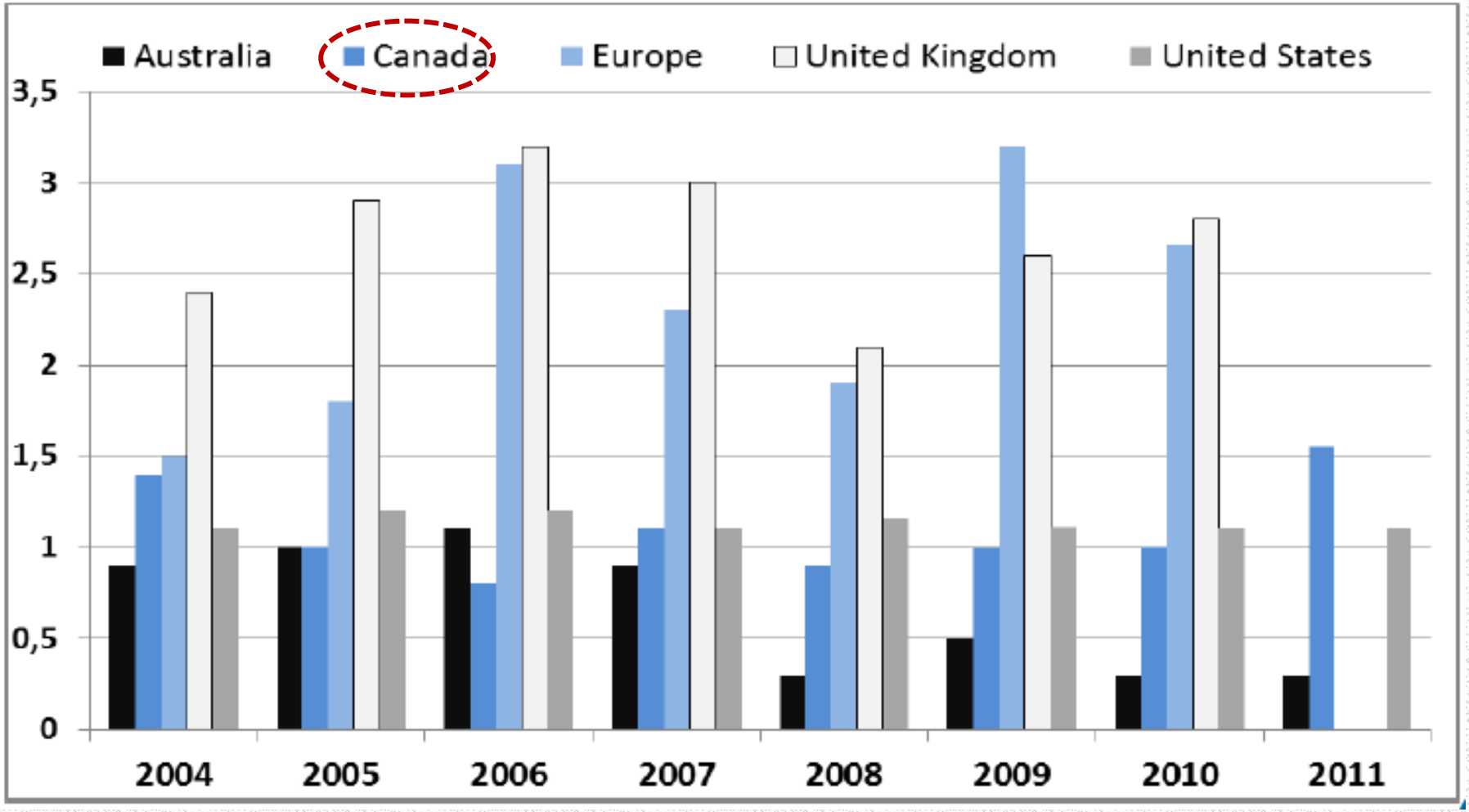



OECD, *Commercializing Public Research: New Trends and Strategies*, 2013.

***Licensing From Revenue Has Been Low & Level in Canada – Not A Good Metric***

## Creation of public research spin-offs, 2004-2011

Per USD PPP 100m research expenditure




OECD, *Commercializing Public Research: New Trends and Strategies*, 2013.

***Spin-Off Creation Marginal in Canada Globally Little Evidence of Job Growth***

# Why such poor return for innovation investment in Alberta?

Research "Supply-Push" Model

**Innovation Investments**
- Government
- Business
- Private
- FDI

**Innovation System**
- Policy & Strategy
- Research
- Tech Transfer
- Entrepreneurialism
- Industry
- Support Systems

**Regional Competitiveness**
- New Processes
- New Products
- New Marketing Methods
- New Business Models

**Economic Return On Investment**
- GDP Growth
- Prosperity Growth
- Improved Productivity

*.....creating a Knowledge Based Economy of the future and diversifying the Alberta Economy (Advanced Technology Industries)*

Reif, *Alberta's Innovation Ecosystem*, EMBA, 2010.

**Alberta's Innovation Ecosystem**

- Weak Diversification Motivation
  - Weak Need For Advanced Technology Industries & Innovation
- Tech Industry 'Crowded Out'
  - Competition For Skills & Funds
  - Tech Entrepreneurs competing With 'Run-up' in oil prices and demand
- Many Tech Entrepreneurs Go Elsewhere
  - Weak Innovation Incentives in AB
  - Investment Incentives not like BC/ON/PQ
  - Entrepreneurs Competing With Other Canadian Regions With Very Strong Support
- Weak Marketing Culture
  - Commodity markets don't involve selling
  - Product development involves customer development skills

Reif, ***Alberta's Innovation Ecosystem***, EMBA, 2010.

***Weak Technology Entrepreneurialism Conditions***

- Geopolitical Fragmentation on Several Levels
  - Division of Power
    - Federal
    - Alberta
    - Municipal
  - Jurisdictional Conflict
  - National Duplication
  - Regional Competition
  - Role of 'Creative Cities'
    - Rise of Cities
    - Rural / Urban Divide
  - 'Creative' vs. Resource Base

**Impeding Critical Mass To Compete Globally**

Western Economic Diversification Canada

National Research Council Canada

aeda ALBERTA ECONOMIC DEVELOPMENT AUTHORITY

calgary economic development be part of the energy

EDMONTON ECONOMIC DEVELOPMENT

Reif, *Alberta's Innovation Ecosystem*, EMBA, 2010.

***Geopolitical Fragmentation Inwards Looking vs Global Leadership***

- Unclear Intangible Jurisdictional Advantages
  - Lack of Focus & Vision
  - How do advanced technology industries fit in?

- Agglomeration Slow
  - Lack of Alignment to Regional Strengths

**1990's – early 2000's**

**Advanced Technologies**
**Cleantech**
**Biotech**
**Healthcare**
**ICT**
**Nanotechnology**

Reif, *Alberta's Innovation Ecosystem*, EMBA, 2010.

***No Vision For Alberta's Technology Industries Beyond Resources***

- Huge Misalignment
  - Universities – Industry Needs
  - Graduates – Industry Needs
- Research Investment Imbalance
  - Scientific Heavy
  - Weak Industrial Research
- Pre-Alberta Innovates (2009)
  - Prior Lack of Focus
  - Many Funding Programs

**Gap Between Technology Aspirations and Canada's Industries**

**The 'Hewers of Wood & Drawers of Water Problem'**

Government of Alberta
Advanced Education and Technology

Reif, *Alberta's Innovation Ecosystem*, EMBA, 2010.

***Major Misalignments Exists Across Alberta's Innovation Ecosystem***

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Alberta Innovation Vouchers
Industry Commercialization Associates Program
Industry R&D Associates Program, etc

Alberta R&D Tax Credit

**2009**
**Innovation Renovation**
↓
**'Alberta Innovates'**

*Continuing Problem Area*

**IP Stuck in Universities**

**'Campus Alberta'**

Task Force on Value Added and Technology Commercialization, 2007.

***2007 AB Task Force on Commercialization***

**2009 ($127MM)**

Alberta Innovates – Alberta Research and Innovation Authority

Alberta Innovates – Energy and Environment Solutions

Alberta Innovates – Bio Solutions

Alberta Innovates – Health Solutions

Alberta Innovates – Technology Futures

**Advanced Technologies**
- Cleantech
- Biotech
- Healthcare
- ICT
- Nanotechnology

## Defining Alberta's Jurisdictional Advantages
*(Alignment or Picking Winners?)*

Why No Alberta Innovates Information Solutions?


## Campus Alberta
*University Research Alignment (not going so well!)*

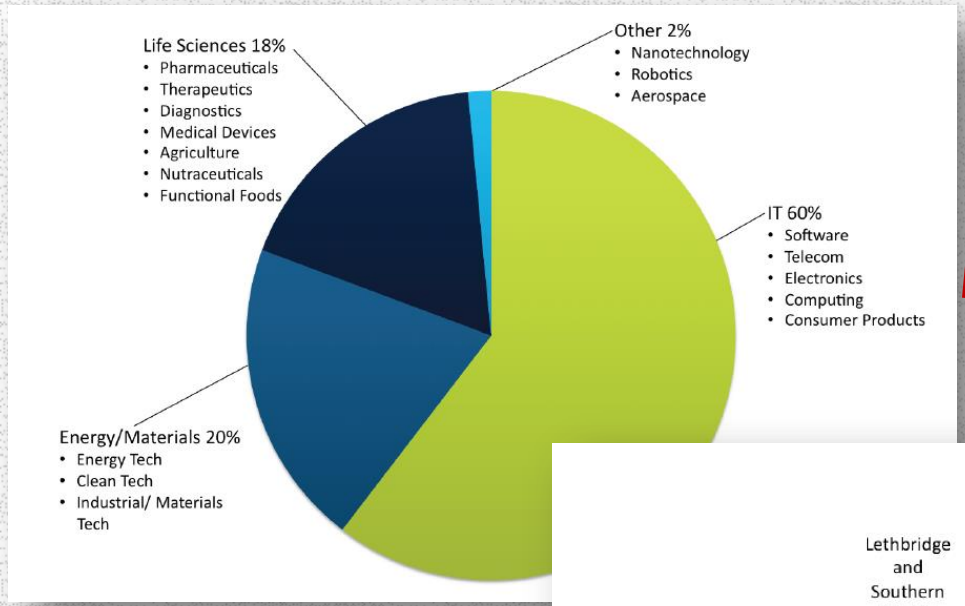
University of Alberta

University of Calgary

University of Lethbridge

## Commercialization Institute ?
*(Emerson Report 2010)*

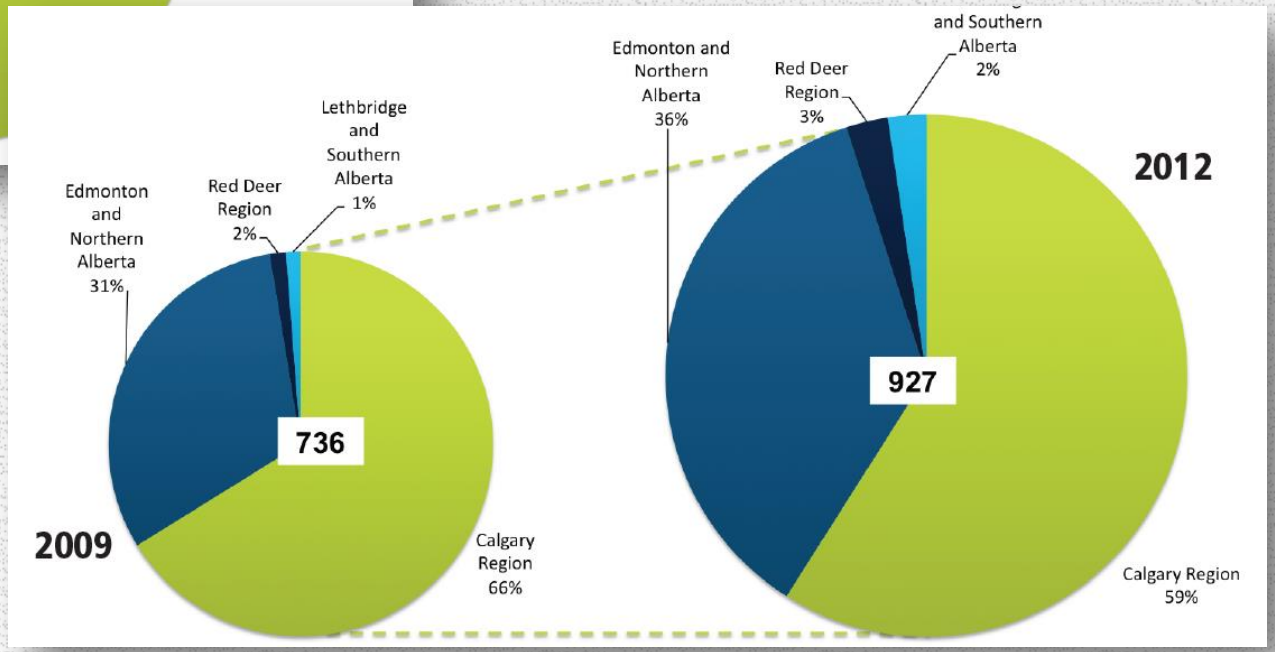
**2009 'Innovation Renovation' – Driving Efficiency & Effectiveness in AB Jurisdictional Advantages**




**Technology Companies**

**Seed Stage or Later('12)**
**927 Firms ('12)**
**25% Increase since 2008**

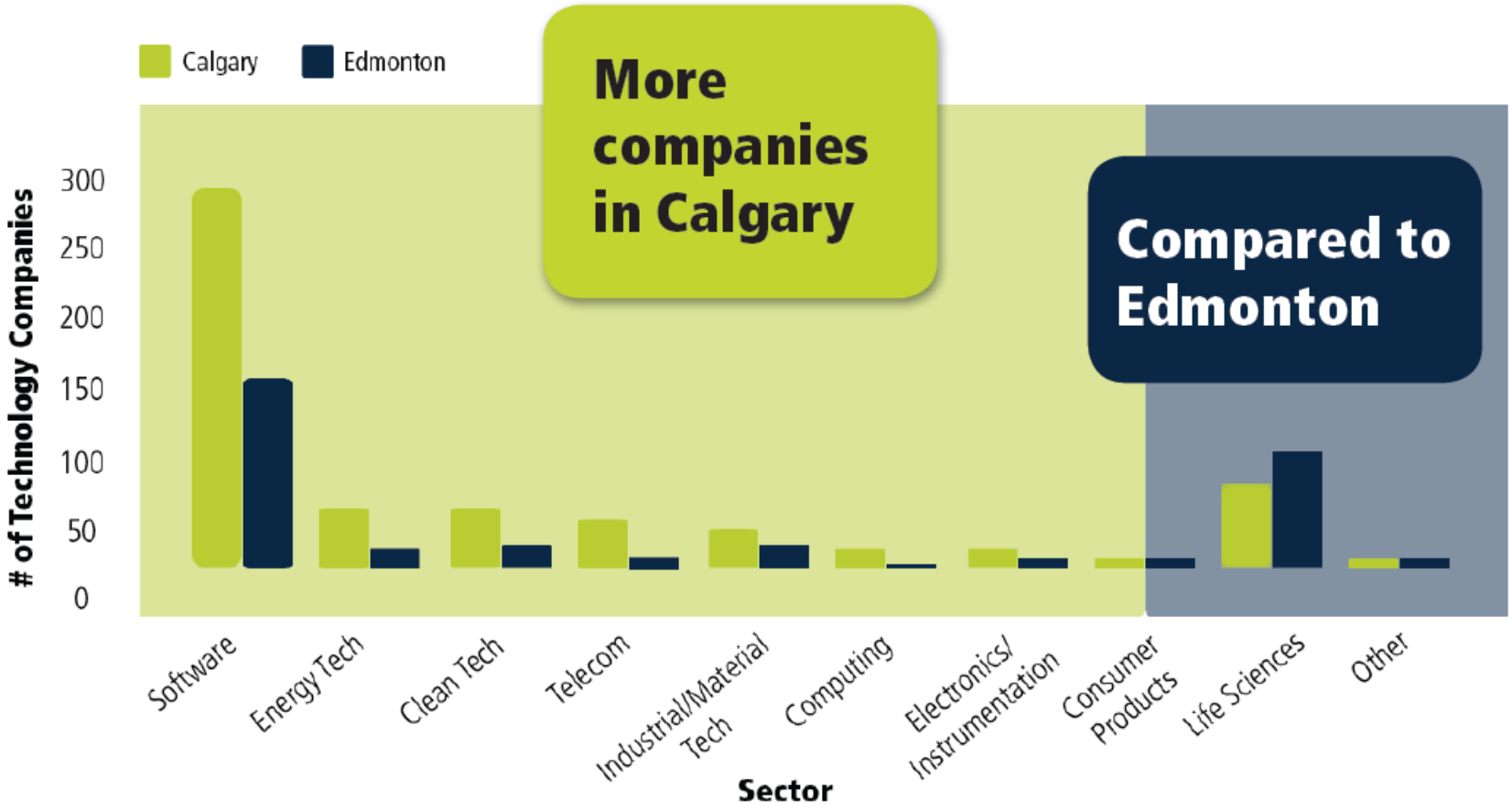
**Improved Efficiency & Effectiveness Since 2009 Innovation Renovation**




**Predominantly Urban Centers**

Alberta Enterprise, *Deal Flow Study*, 2012.

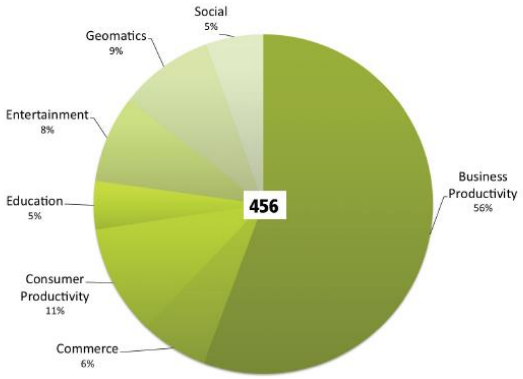
***Alberta Early Stage Technology Companies And Entrepreneurial Activity***



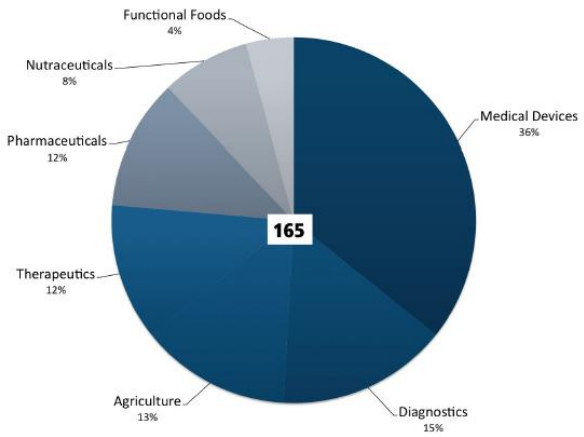

Alberta Enterprise, *Deal Flow Study*, 2012.

***Alberta Early Stage Technology Companies***

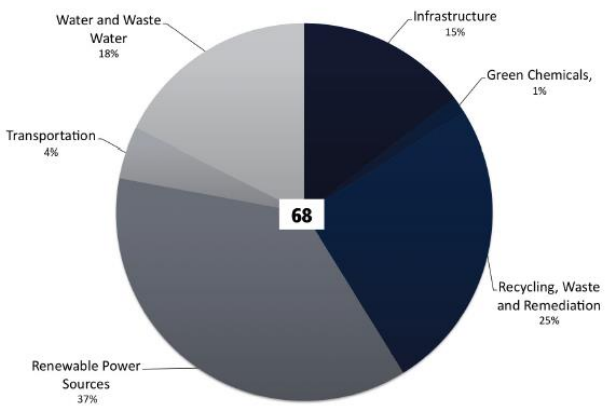
## Software Breakdown



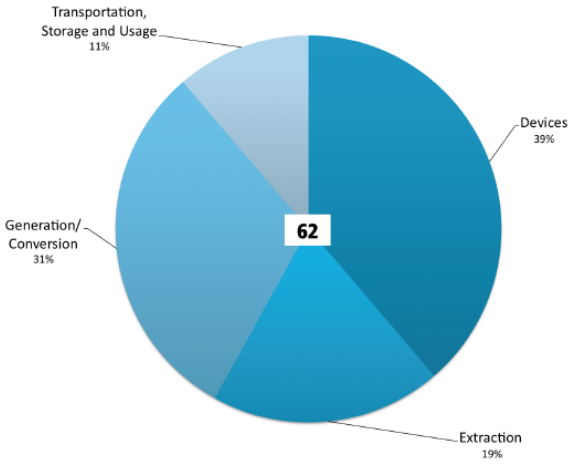

## Life Sciences Breakdown



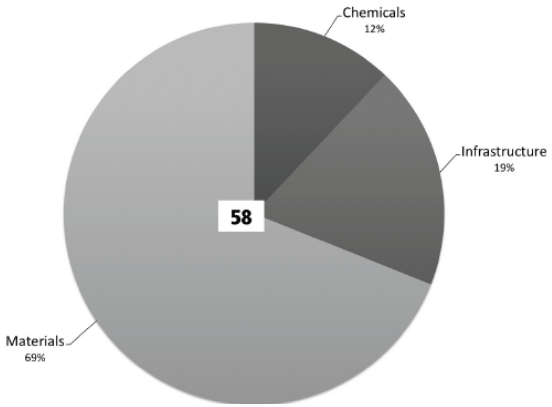

## Clean Tech Breakdown




## Energy Tech Breakdown




## Industrial/Material Tech Breakdown

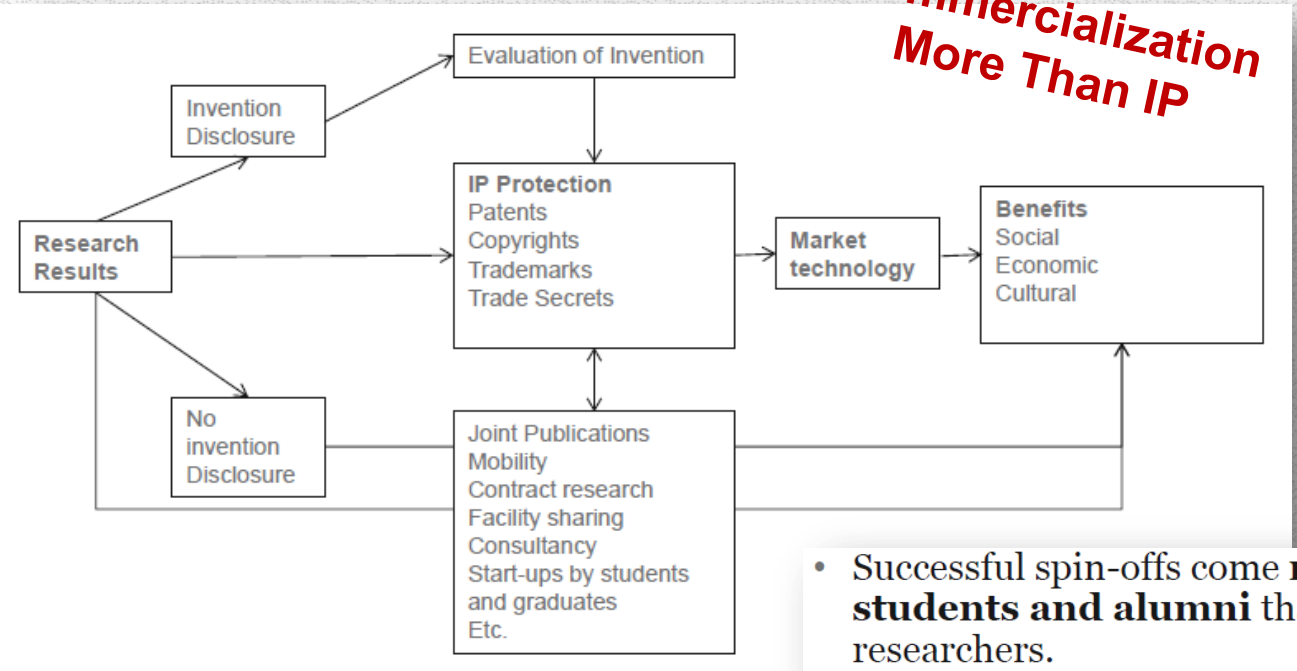



Alberta Enterprise, *Deal Flow Study*, 2012.

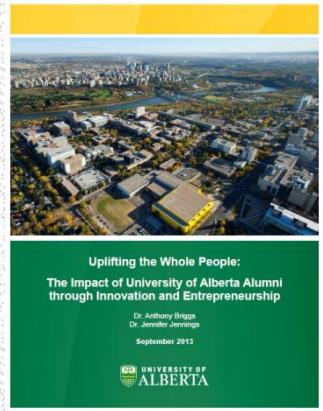


**Alberta Early Stage Technology Companies**

## Commercialization More Than IP




OECD, *Commercializing Public Research: New Trends and Strategies*, 2013.




Briggs & Jennings Report

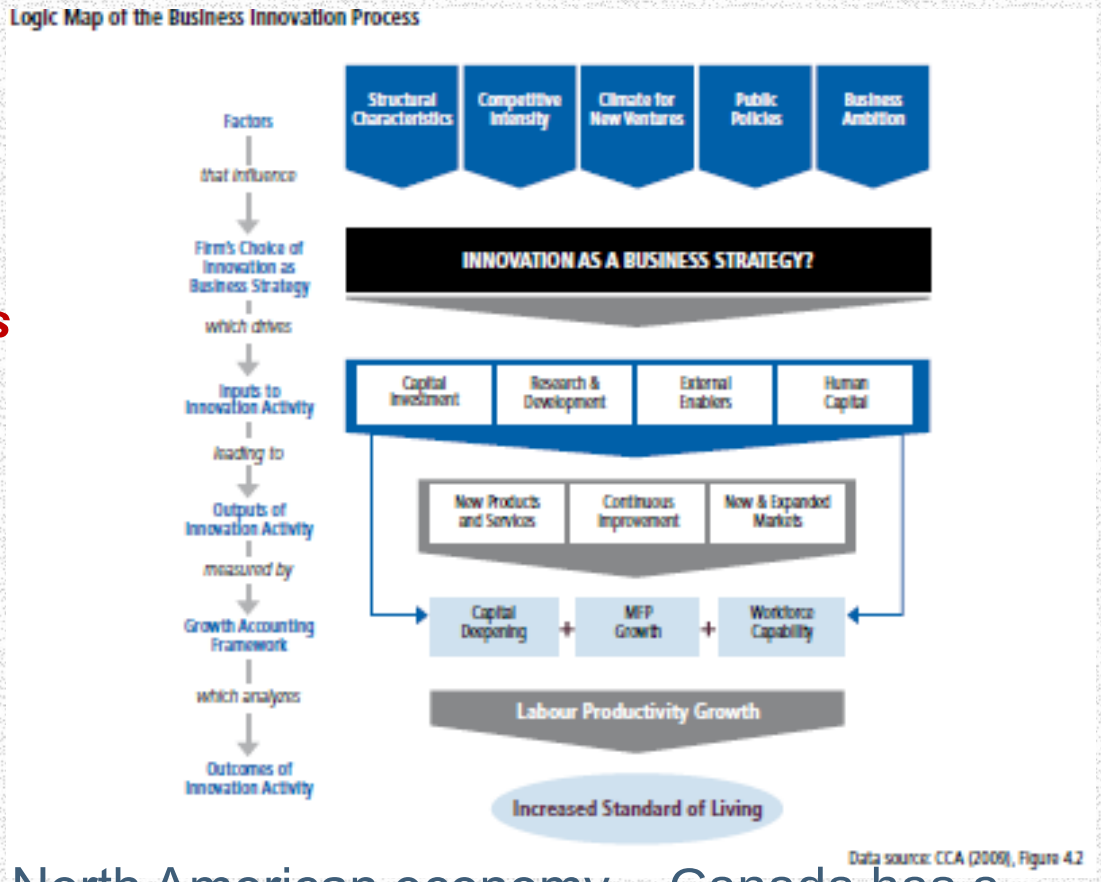
- Successful spin-offs come **more often from students and alumni** than from professional researchers.
- Creating a favourable eco-system for student and academic entrepreneurs
  - e.g. Aalto Centre for Entrepreneurship (ACE) in Finland
- Work study programmes, internships, mentoring relationships, workshops, seminars, all-campus initiatives, free online entrepreneurship courses, …
- "Crowd funding for research": more about engaging scientists with society and the economy
  - University of Utah's TTO entered in 2013 an exclusive agreement with crowdfunding platform RocketHub

## Universities Are About Talent Not Commercialization

***University Research Commercialization Has Been Poor Everywhere - Need New Strategies***

**Canada's Receptor Strengths**
**ICT, Aerospace, Pharmaceuticals**

**Shortage of Other Receptors Will Continue To Confound Research "Supply-Push" Policies**




Council of Canadian Academies, ***Paradox Lost: Explaining Canada's Research Strength and Innovation Weakness***, 2013.

- Canada's role in an integrated North American economy – Canada has a higher percentage of low technology industries compared with US.
- Small size of the domestic market – supports less innovation.
- Commercial success of Canadian business – "low-innovation equilibrium".

***Why Has Canada's Research Strength Not Translated Into Innovation Strength***

**Old Paradigm**

**Science Policy = Innovation Policy**

**'linear thinking'**

**Research 'Supply Push' Model**

**New Paradigm**

**Science Policy & Innovation Policy Separate**

**Research: Spend $ → Knowledge**
**Innovation: Knowledge → Make $**

**Demand 'Pull' Model**

## S&T Strategy

S&T Approach To Innovation Policy:

- University Centered
- University Commercialization
  - IP Stuck in Universities
- Science Suffering

## Industrial Strategy

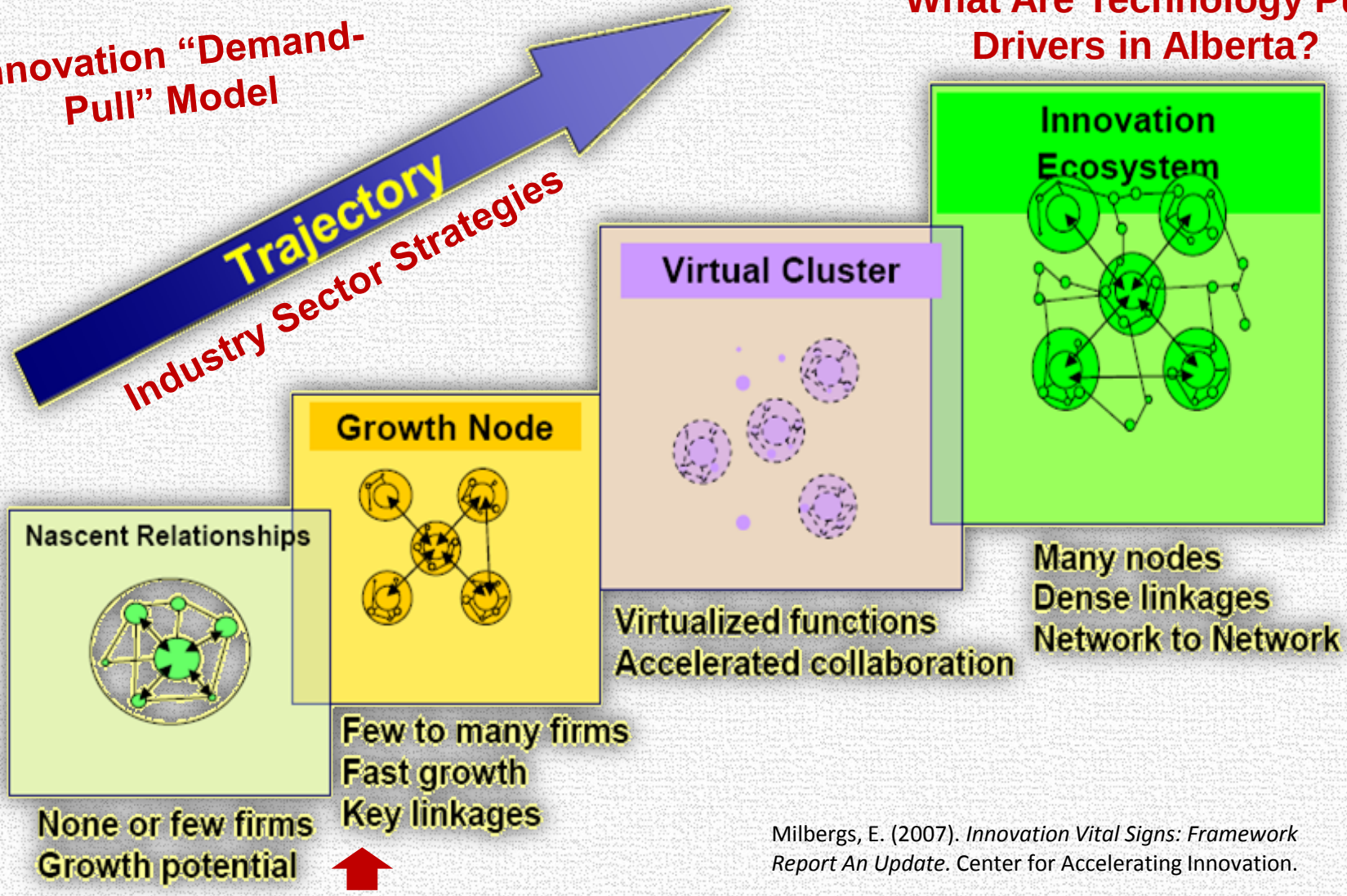
Integrated 'Whole of Government Approach' To Innovation Policy:

- Firm Centered
- Market Signals
  - Trade, Procurement, Regulatory
  - Visionary Initiatives
- Input Costs
- Innovation Ecosystem
- Science Policy

**Bob Fessenden Presentation, *Science Technology & Innovation New Thoughts on an Old Subject*, 22 Jan 14.**

***New Innovation Policy Paradigm***

## What Are Technology Pull Drivers in Alberta?



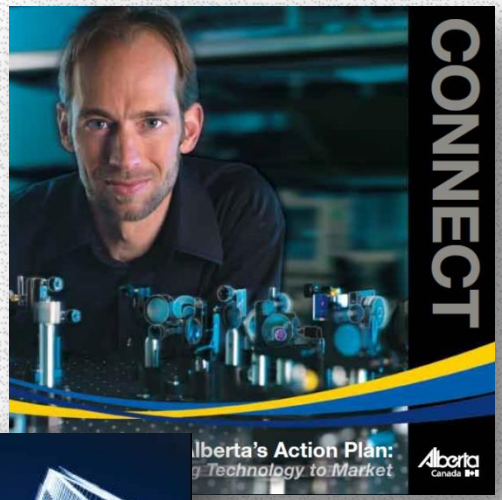

Milbergs, E. (2007). *Innovation Vital Signs: Framework Report An Update*. Center for Accelerating Innovation.

***Innovation Ecosystem Evolution – Industry Sector Clusters***

Task Force on Value-added and Technology Commercialization

Final Report to the Minister

2007

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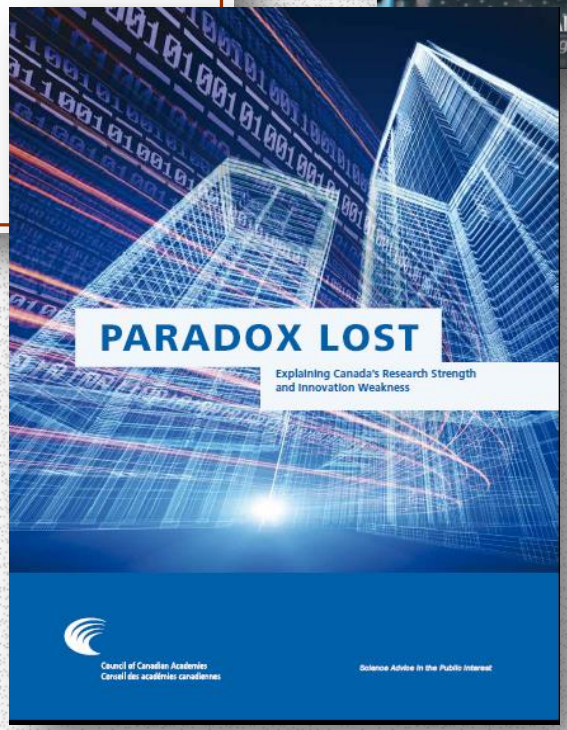
2012 Deal Flow Study

December 2012




EDMONTON CHAMBER OF COMMERCE

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**Achieving Economic Diversification in Alberta**

**November 2012**

**Issue**

Long recognized as an area of concern and limitation, Alberta's economy is not sufficiently diversified. More than 72% of our mercantile trade remains concentrated in oil and gas, and Alberta's commodity export base has not changed substantially over time. While other markets exist, the USA continues as our prime and dominant market.

To achieve an expanded and diversified economy, strong and committed leadership by the Alberta government is required. Serious action and a specific diversification program are required for Alberta to grow and achieve its long-term potential, beyond oil and gas.

## Useful Publications

- We Care Because Medium Firms Are More Productive, Hire More, Can Compete Better Internationally, & Invest More in R&D Which Drives Technology Innovation

- Alberta Still Young, Changing Fast, in a Rapidly Changing World
  - Like Ontario/PQ Optimism in 1960s
  - Industry, Cluster, Ecosystem Immaturity
  - Weak Industry Sector Data & Analysis (Western Canadian Institute of Competitiveness & Prosperity)

- Alberta Firm Size Distribution Similar To Rest of Canada, Slightly Higher Proportion of SMEs (Younger Industries/Supply Chains)

- Alberta Business Growth Problems Similar To Other Jurisdictions – With Some Local Issues:
  - Small Population, Immature Industry Ecosystems, Weak Start-Up Incentives, Weak VC, High Cost Structure, Crowding Out By O&G, 'Branch-Plants', Low Technology Intensity Resource Industries
  - Leadership Preference For 'Life-Style' and Local Focus

***Small Technology Business Growth***

- Gap Between Technology Aspirations and Canada's Industries (The 'Hewer of Wood & Drawer of Water Problem')
  - R&D Spending Mainly At Universities → Research "Supply-Push" Model
  - Research "Supply-Push" Policies Have Poor Commercialization Outcomes
  - Misalignment Between Research "Supply-Push" and Existing Industry Receptor Demand Side
  - Existing Industries Not Tech Intensive (Most Are Aero, Pharma, & ICT - East)
  - Upstream Western Economies + Skills Mismatch Dialogue
  - Policy Moving To Separating Science & Innovation → Industrial Sector Strategy
- Rapidly Growing Manufacturing & Chemical Value Add Industry Sectors and Emerging Integrated North-West Super-Cluster Slowly Increasing Tech Intensity in Alberta
- Since The 2009 Innovation Renovation Better Small Tech Firms Success In Energy, Environment, Biotech, Health – Less So In Other Less Mature Clusters/Ecosystems/Sectors
  - 25% Increase in # Alberta Start-ups
  - Leaving Blind Spots in Other Sectors: Nano Underperforming, Manu, Chemical, Fusion, …..
  - No Compelling Reason For Entrepreneurs To Remain & Grow Other Sectors

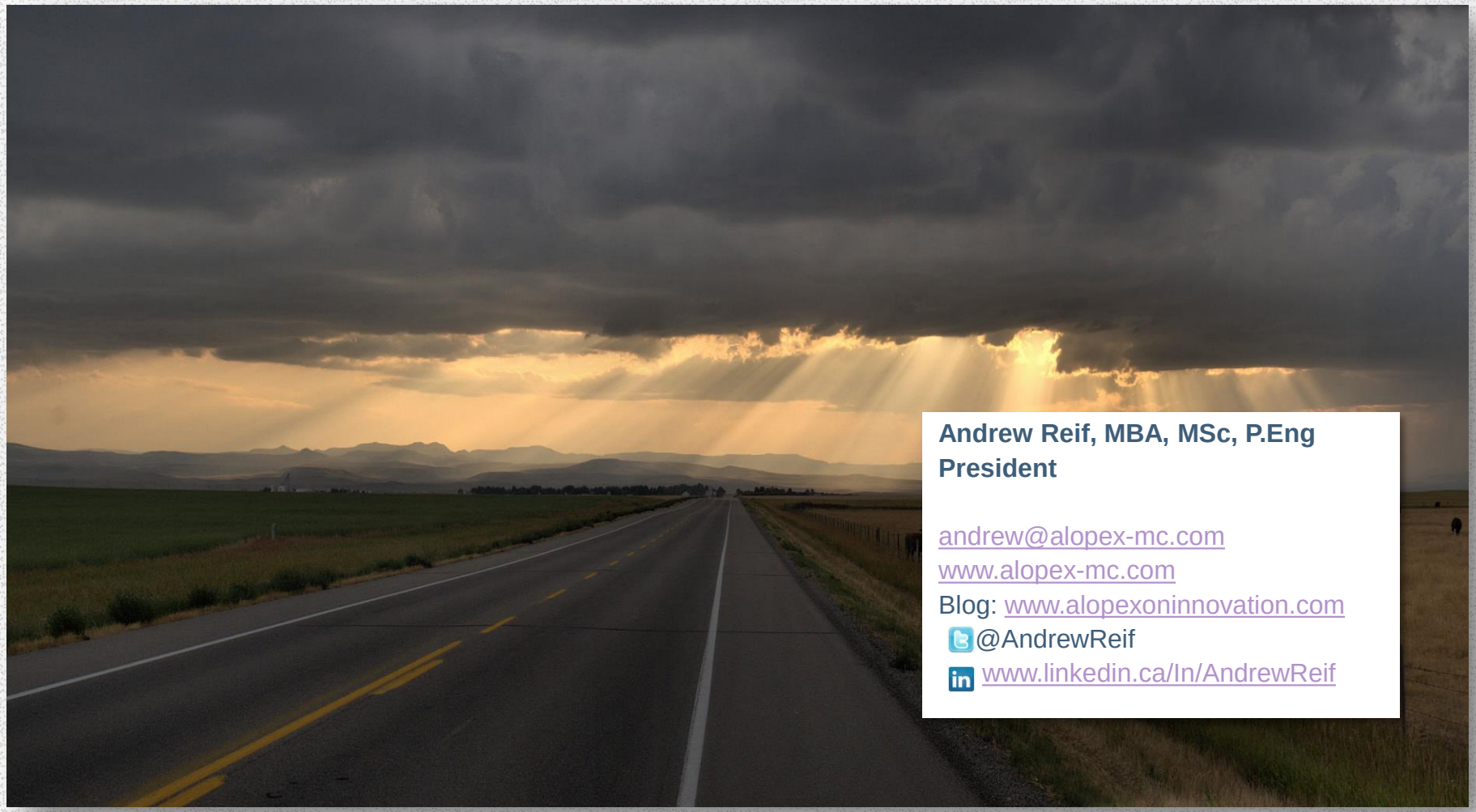
***Small Technology Business Growth***

# 2014 Theme Sub Initiative Ideas

- Increasing Technology Entrepreneurialism Across All of Alberta's Industrial Sectors:
  - Industrial Sector Innovation Ecosystem Strategies (Demand Drivers)
  - Expand Efforts in Manufacturing & Chemical Value Added Industries
  - Identifying Visionary Initiative (eg: Fusion, ….)
- Bringing Attention To Alberta Innovates Blind Spots
  - Why No 'Alberta Innovates Information Solutions'?
- Supporting University Graduate & Alumni Entrepreneurial Initiatives
- Addressing Small Tech Business Growth Issues Unique To Alberta
- Improved Alberta Economic Data Reporting & Analysis
  - Better Firm Data By Sector/Ecosystem/Cluster
  - Western Canadian Institute of Competitiveness & Prosperity

***Role of NGOs in Advancing Innovation & Commercialization of Emerging Technologies***

# Questions?



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Avoid Rehashing What Is Already Known

- Launch: Subscriber Survey
  - Identify Who Has Interest in SMEs?
- Series of Local Co-Hosted Consultations
- Interim Results May Suggest Further Activities
- Year End Position Paper

*2014 Theme Approach*