

Science,  
Innovation and  
Electronic  
Information  
Division



Division  
des Sciences,  
de l'Innovation et  
de l'Information  
Électronique



# Profiling Changes in Western Provinces

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Science, Innovation and Electronic Information Division  
Statistics Canada

**THECIS Innovation Club Breakfast and Lunch**  
**January 31<sup>st</sup> in Calgary; February 1<sup>st</sup> in Edmonton and**  
**February 3<sup>rd</sup> in Saskatoon**



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# General Introduction

## ■ Overview of economic indicators for selected western provinces

- Key industries and growing industries
- Exports
- R&D performance by industry
- Demographics

## ■ Business R&D

- Key industries and growing industries
- Measures of concentration
- Biotechnology

## ■ Public R&D

- Commercialization

# Top 5 industries as % of GDP, 2004



Canada	Saskatchewan	Alberta	British Columbia
Finance, insurance, real estate and management services	Finance, insurance, real estate and management services	Finance, insurance, real estate and management services	Finance, insurance, real estate and management services
Manufacturing	Mining and oil and gas extraction	Mining and oil and gas extraction	Manufacturing
Wholesale trade	Manufacturing	Manufacturing	Health care and social assistance
Health care and social assistance	Transportation and warehousing	Construction	Transportation and warehousing
Construction	Agriculture, forestry, fishing and hunting	Transportation and warehousing	Retail trade



# 5 fastest growing industries (1997-2004)

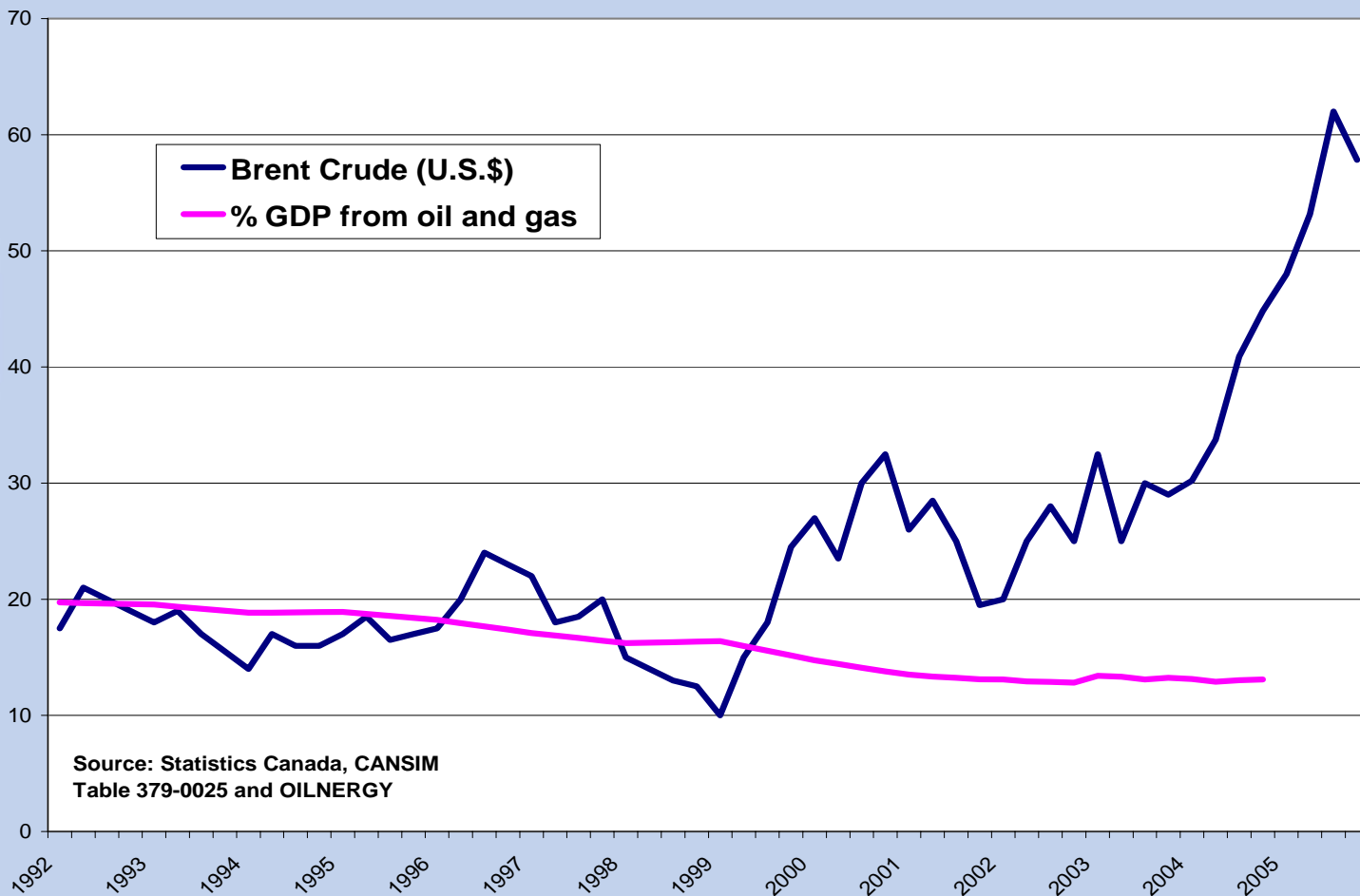


Canada	Saskatchewan	Alberta	British Columbia
Information and cultural services	Information and cultural industries	Retail trade	Information and cultural industries
Administrative and waste management services	Retail trade	Professional, scientific and technical services	Mining and oil and gas extraction
Professional, scientific and technical services	Transportation and warehousing	Construction	Wholesale trade
Wholesale trade	Wholesale trade	Information and cultural industries	Manufacturing
Construction	Arts, entertainment and recreation	Administrative and support, waste management and remediation services	Professional, scientific and technical services





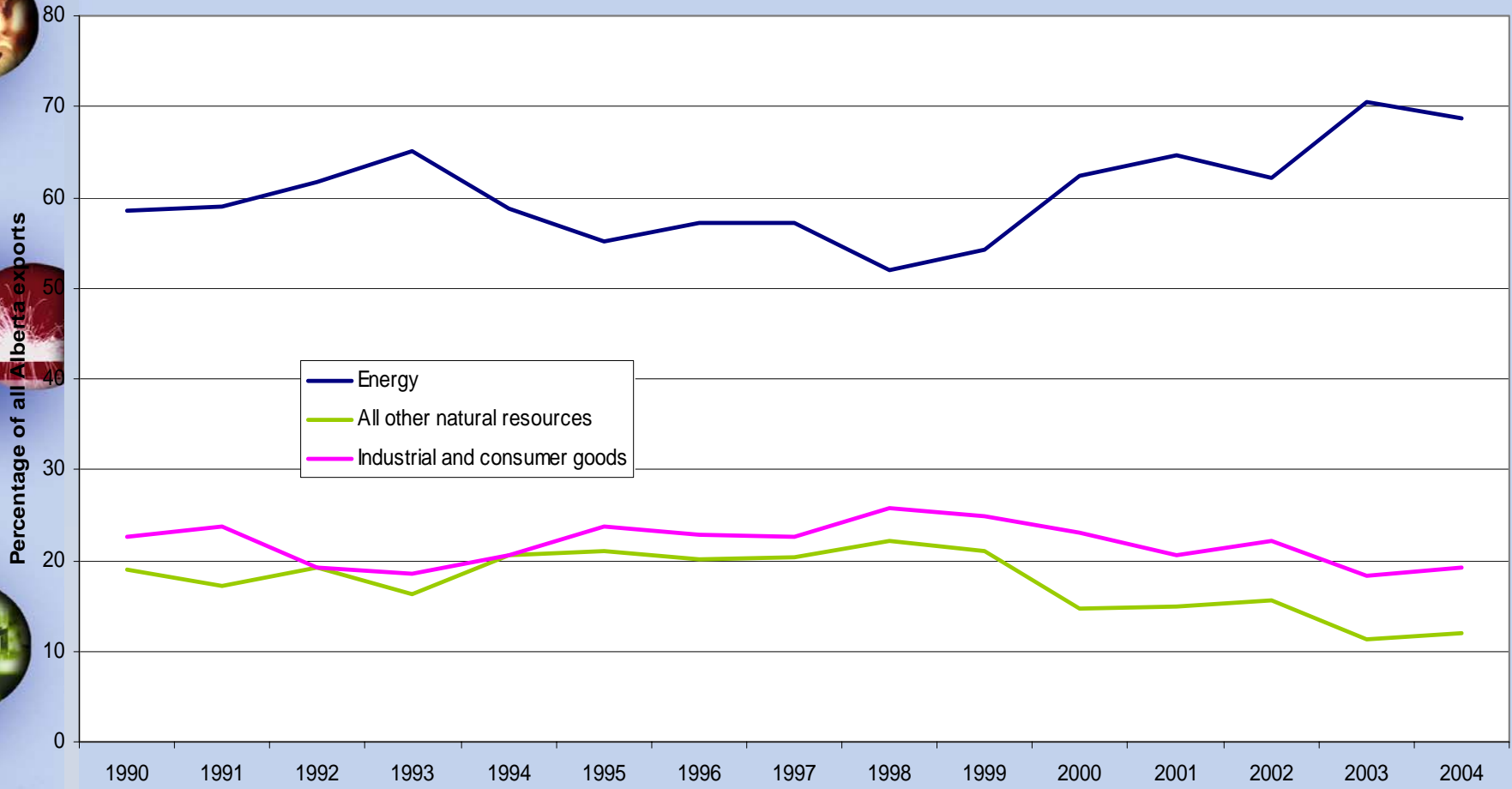
# Price of oil vs. % of Alberta PGDP from oil and gas, 1992-2005



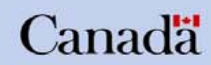
Source: Statistics Canada, CANSIM  
Table 379-0025 and OILNERGY



# Alberta Merchandise Trade, 1990-2004

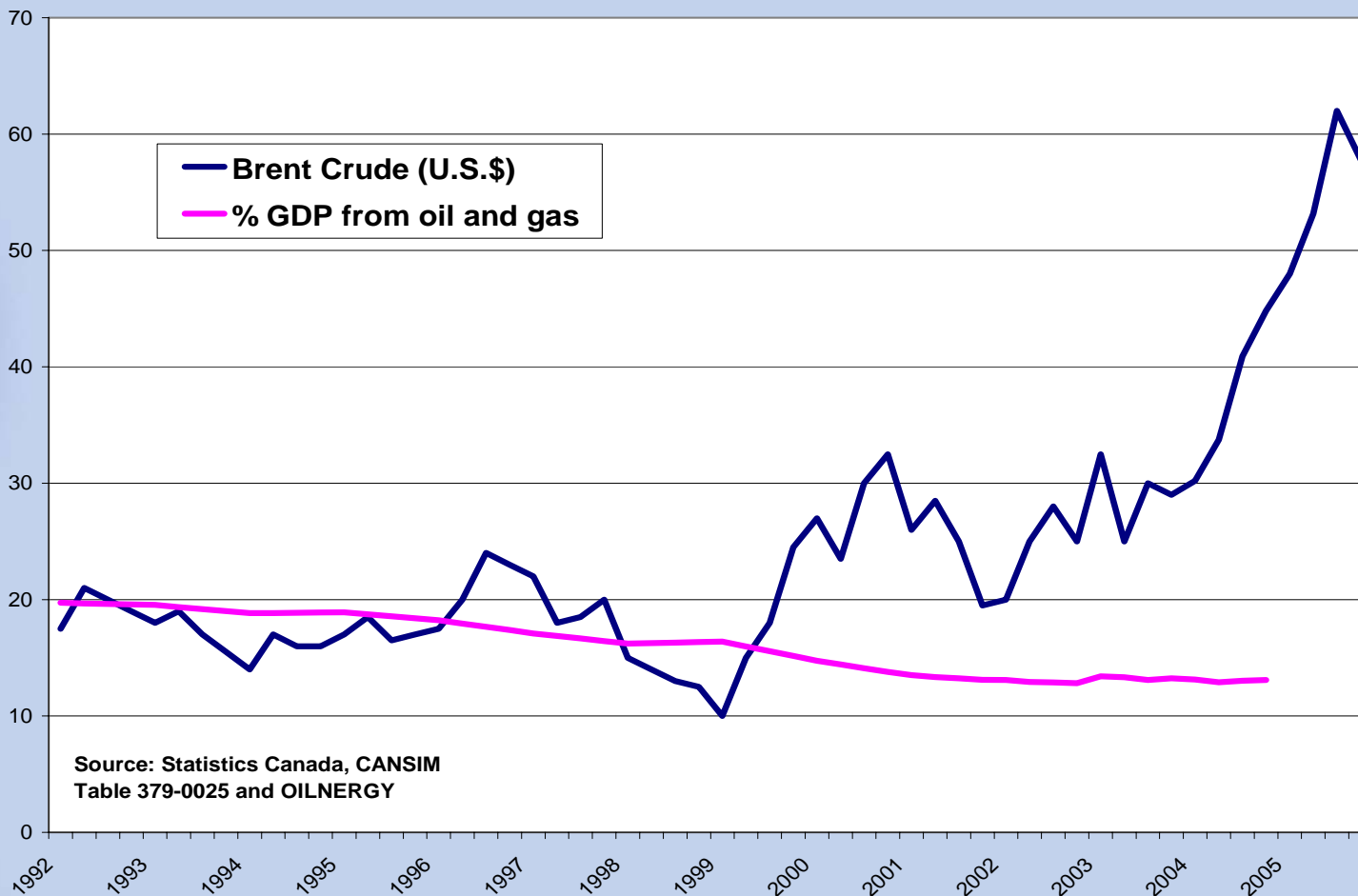


Source: Statistics Canada, CANSIM





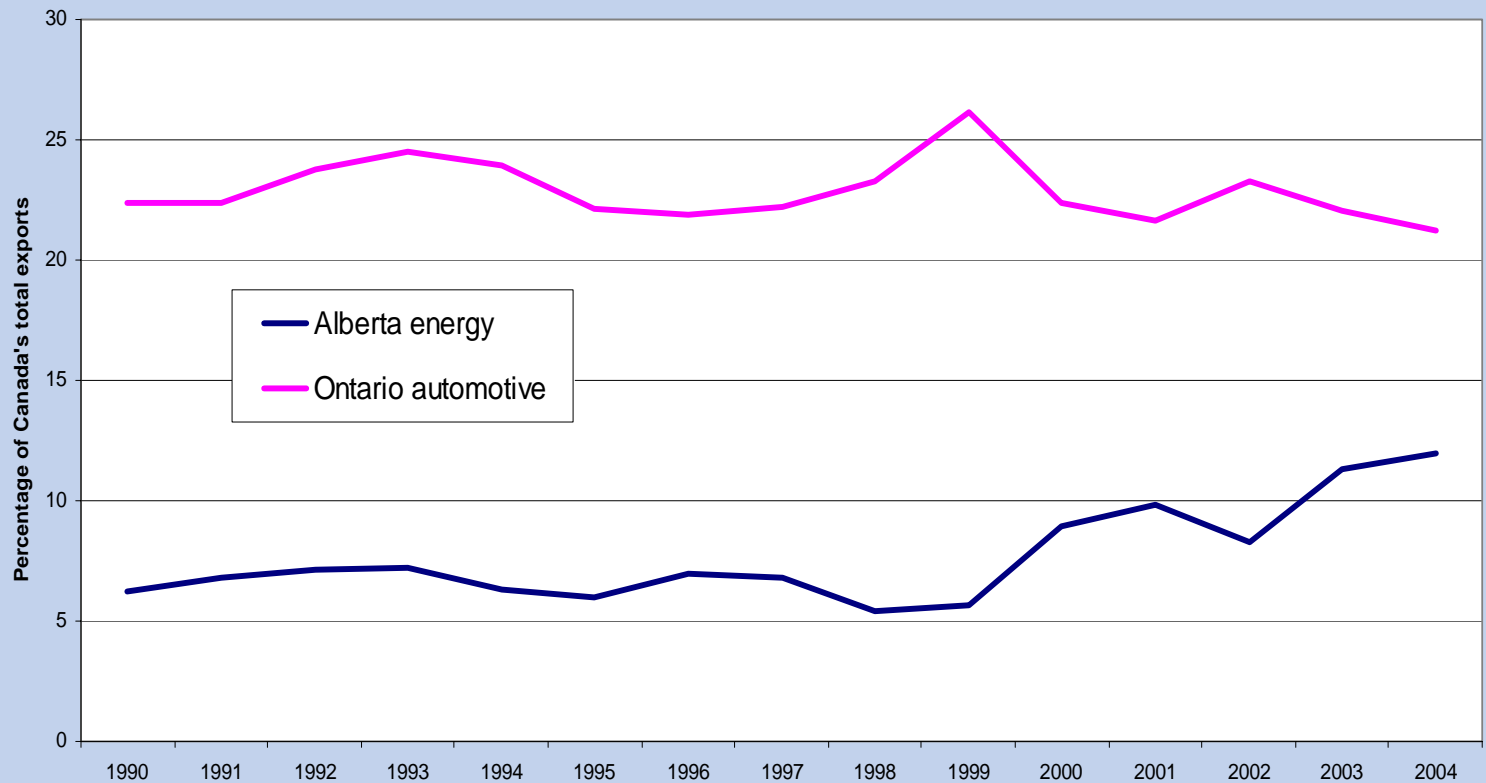
# Price of oil vs. % of Alberta PGDP from oil and gas, 1992-2005



Source: Statistics Canada, CANSIM  
Table 379-0025 and OILNERGY



## Alberta Energy vs. Ontario Automotive exports as a percentage of total Canadian exports, 1990-2004



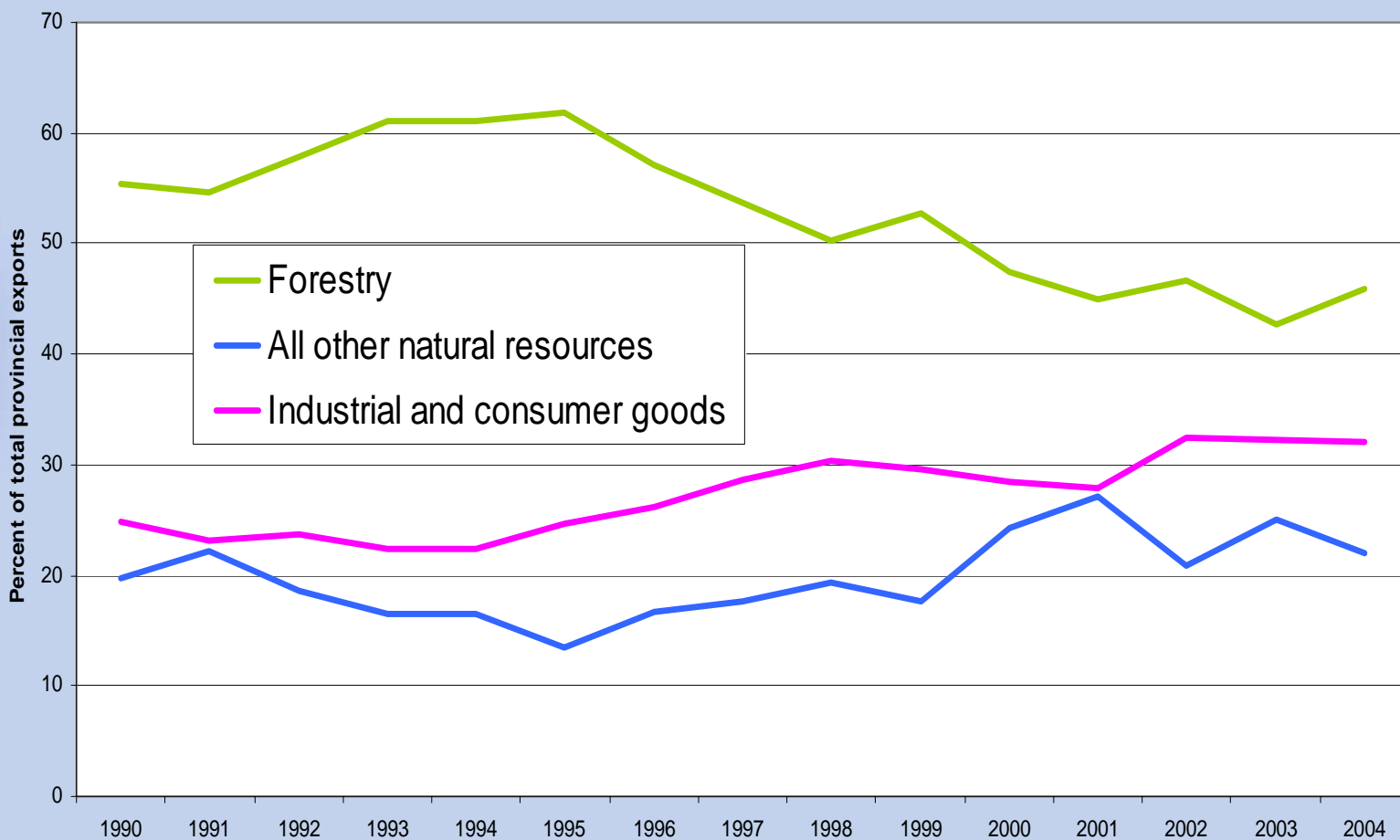
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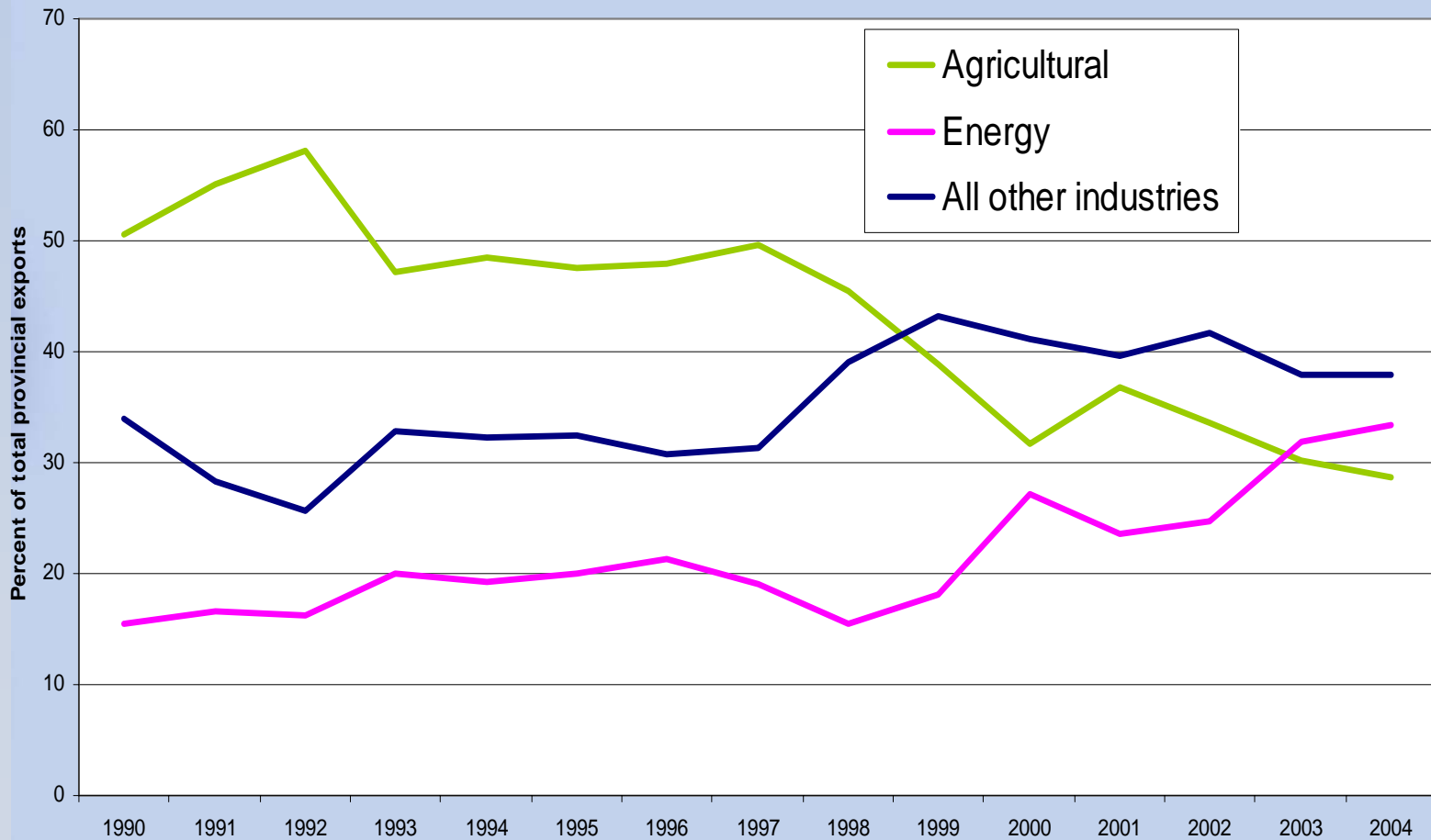
Source: Statistics Canada, CANSIM

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# British Columbia Merchandise Trade, 1990-2004

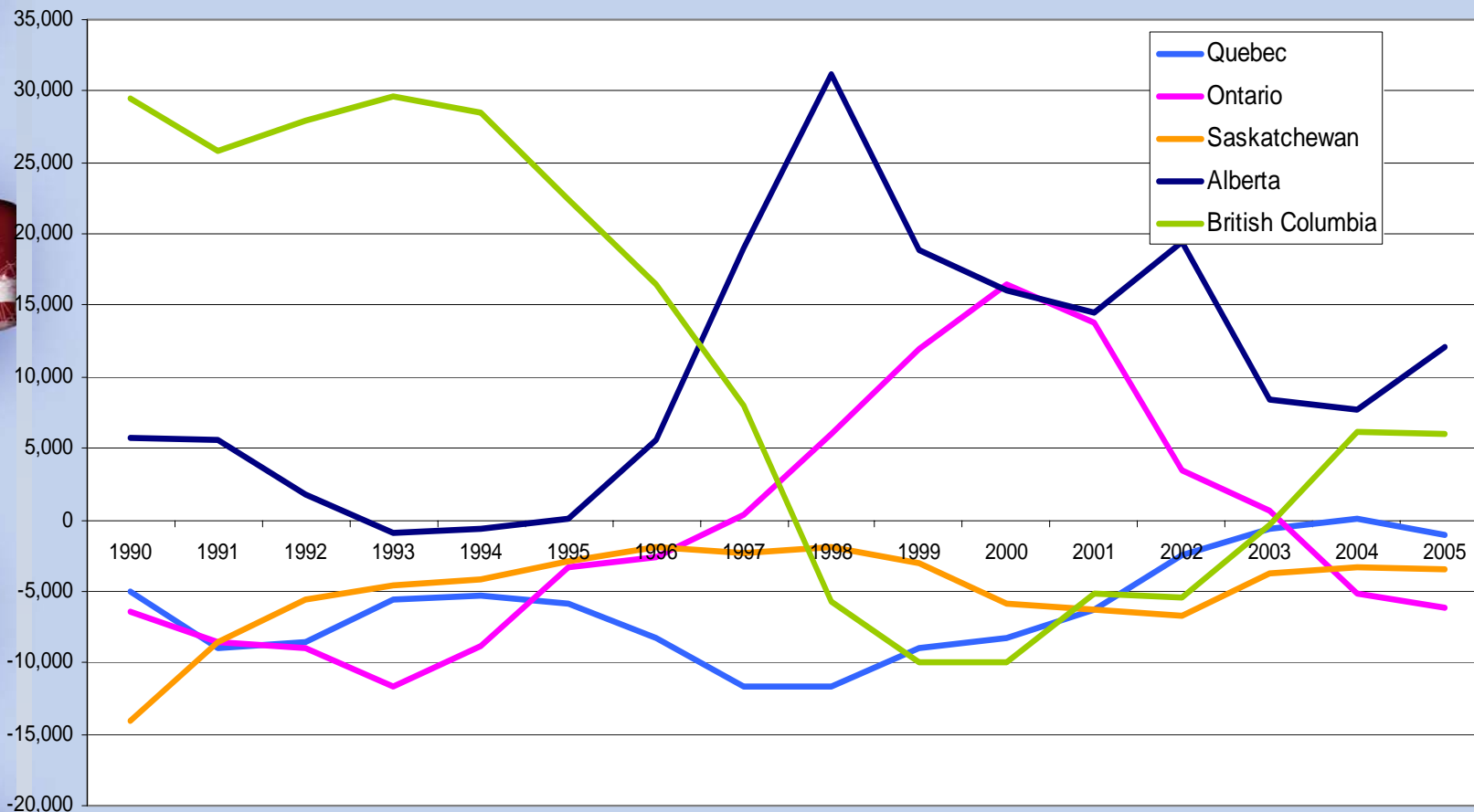


# Saskatchewan Merchandise Trade, 1990-2004





# Net inter-provincial migration, age 18 to 64, 1990-2005



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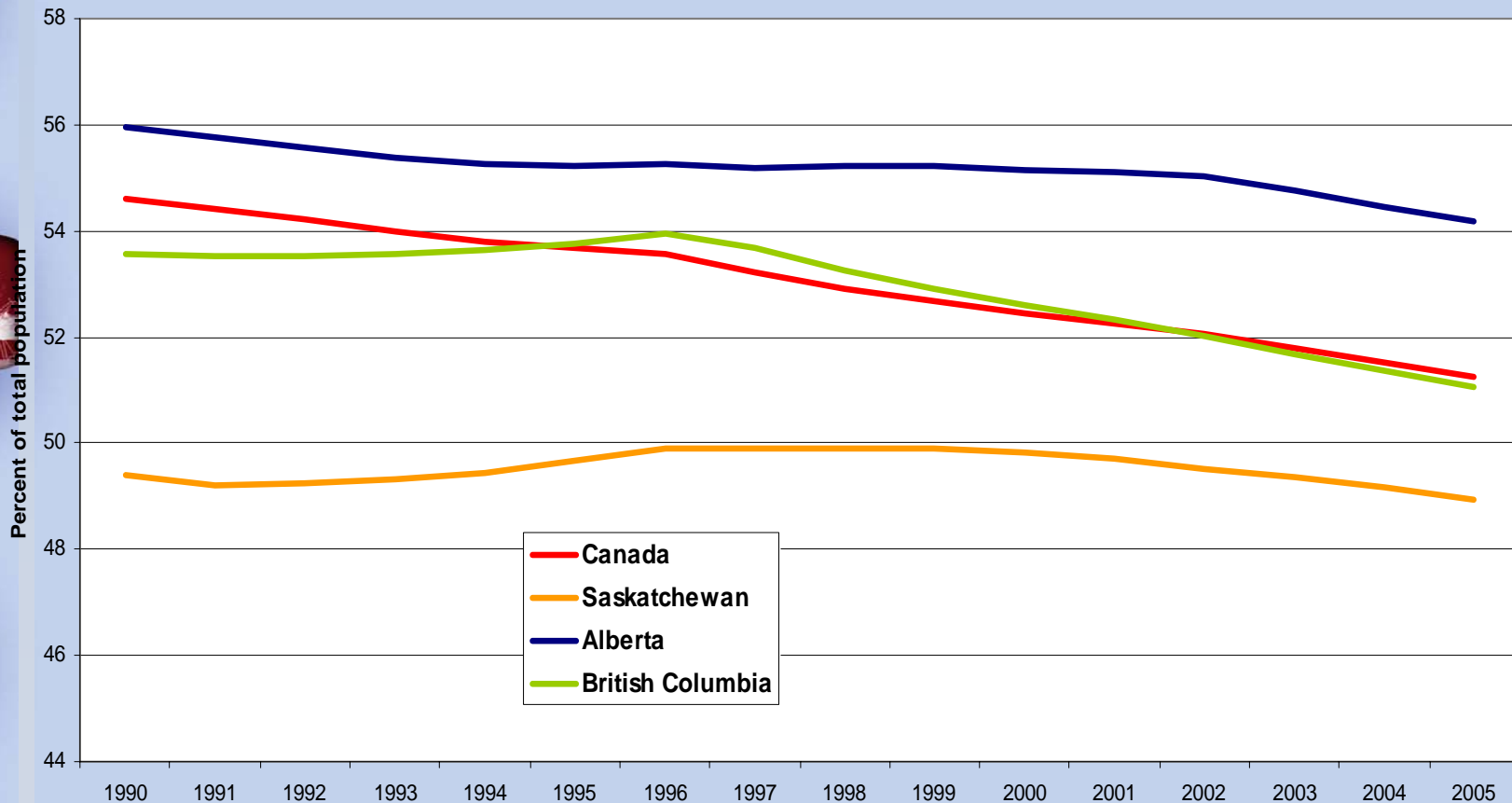
Statistique Canada

Source: Statistics Canada, CANSIM

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# Younger working age (15 to 49) share of population, 1990-2005



Statistics Canada

Statistique Canada

Source: Statistics Canada, CANSIM

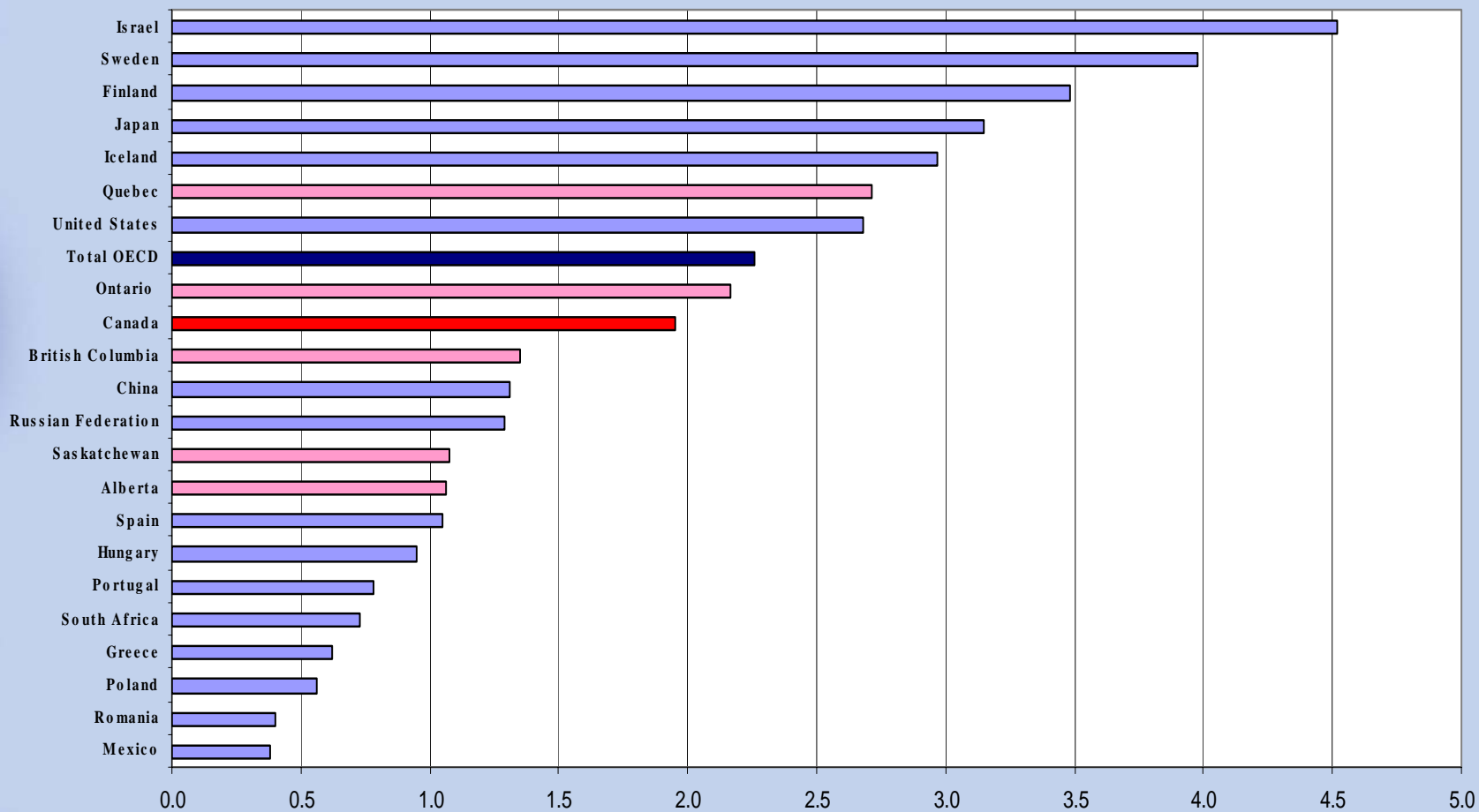
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# Creating capacity for change

- **Innovation brings new or significantly improved products to the market place or new or significantly improved processes to businesses**
- **R&D is the formal foundation of new knowledge creation and the first step in most technological innovation**
- **R&D can be undertaken by a variety of actors – public and private**

# GERD as a percentage of GDP, 2003



# Top 5 industries as percent of BERD, 2003

Canada	Alberta	British Columbia	Saskatchewan
Communications equipment	Oil and gas extraction	Scientific research and development	Architectural, engineering and related services
Pharmaceutical and medicine	Computer system design and related services	Information and cultural industries	Machinery
Computer system design and related services	Petroleum and coal products	Wholesale trade	Wholesale trade
Aerospace products and parts	Information and cultural industries	Pharmaceutical and medicine	Mining
Scientific research and development	Scientific research and development	Computer system design and related services	Pharmaceutical and medicine



# Five fastest growing industries in terms of R&D performance (\$) (1997-2003)



Canada	Alberta	British Columbia	Saskatchewan
Pharmaceutical and medicine	Oil and gas extraction	Scientific research and development	Pharmaceutical and medicine
Scientific research and development	Computer system design and related services	Information and cultural industries	Mining
Information and cultural industries	Scientific research and development	Wholesale trade	Architectural, engineering and related services
Computer system design and related services	All other services	Pharmaceutical and medicine	Transportation and warehousing
Semiconductor and other electronic components	Information and cultural industries	Semiconductor and other electronic components	Scientific research and development

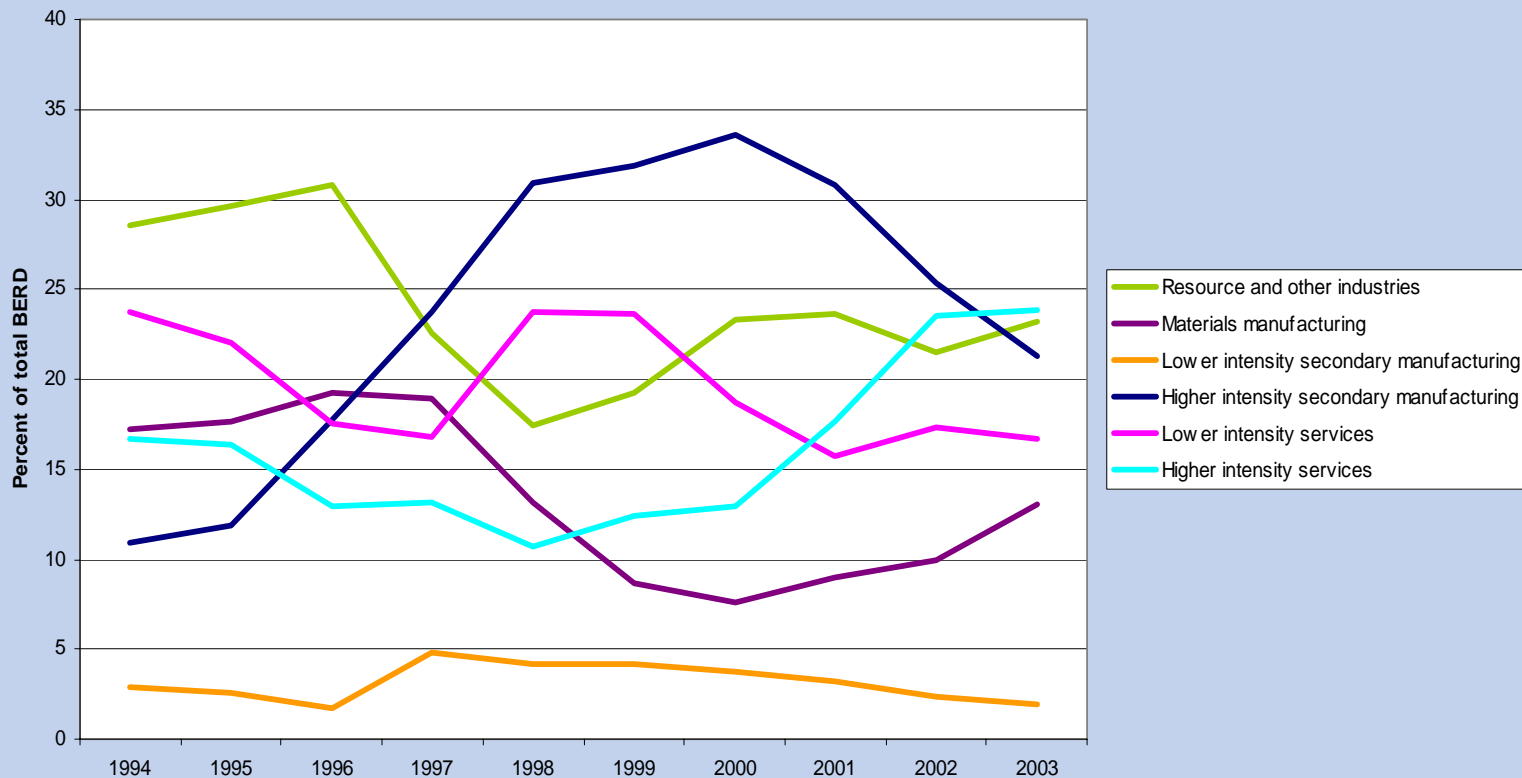


# Manufacturing vs. Services GDP and R&D spending

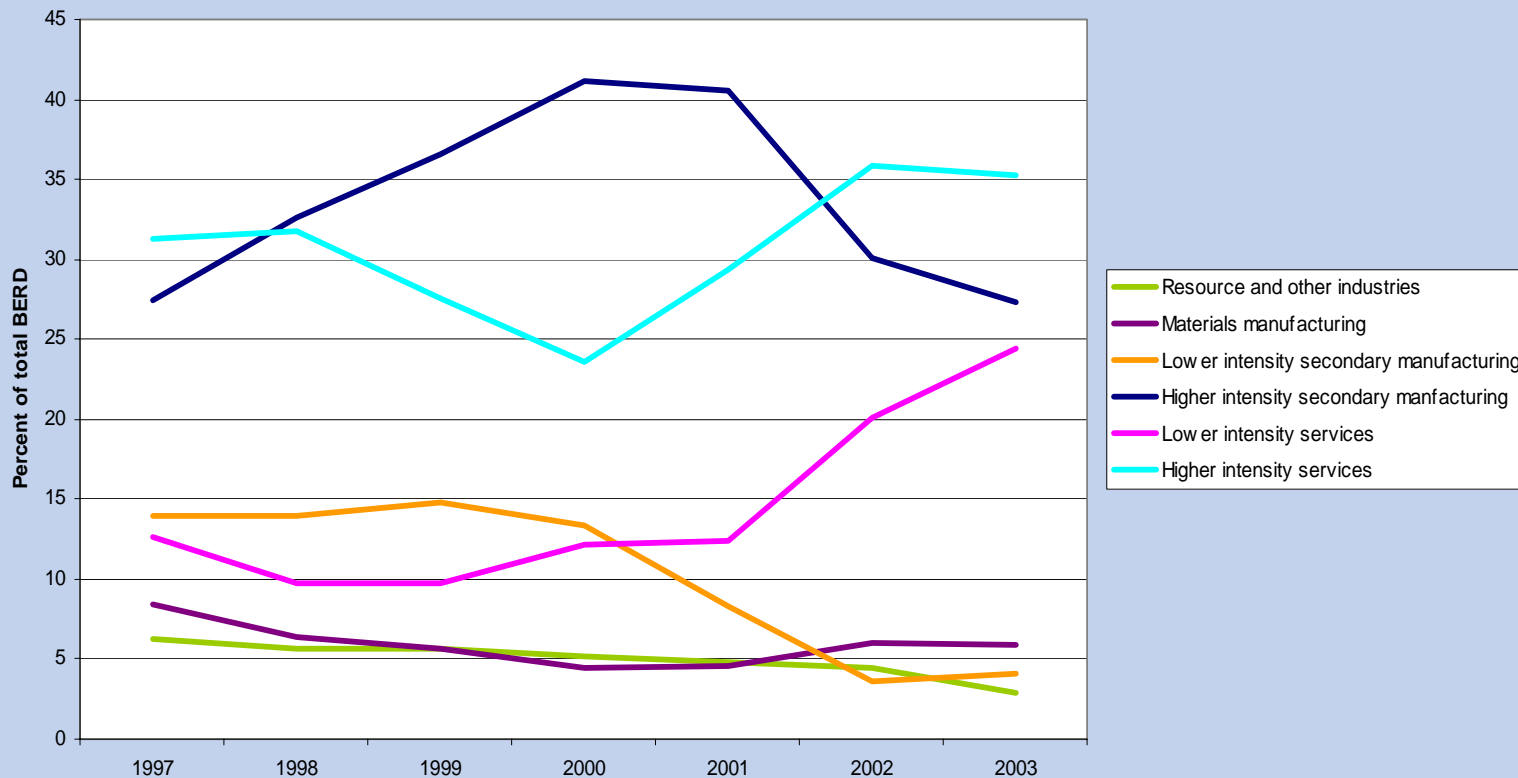


	GDP (%)		Business R&D (%)	
	Manufacturing	Services	Manufacturing	Services
Canada	17	69	60	37
Alberta	10	62	36	41
British Columbia	11	74	37	60
Saskatchewan	7	65	38	39

# Alberta – R&D by sector, 1994-2003

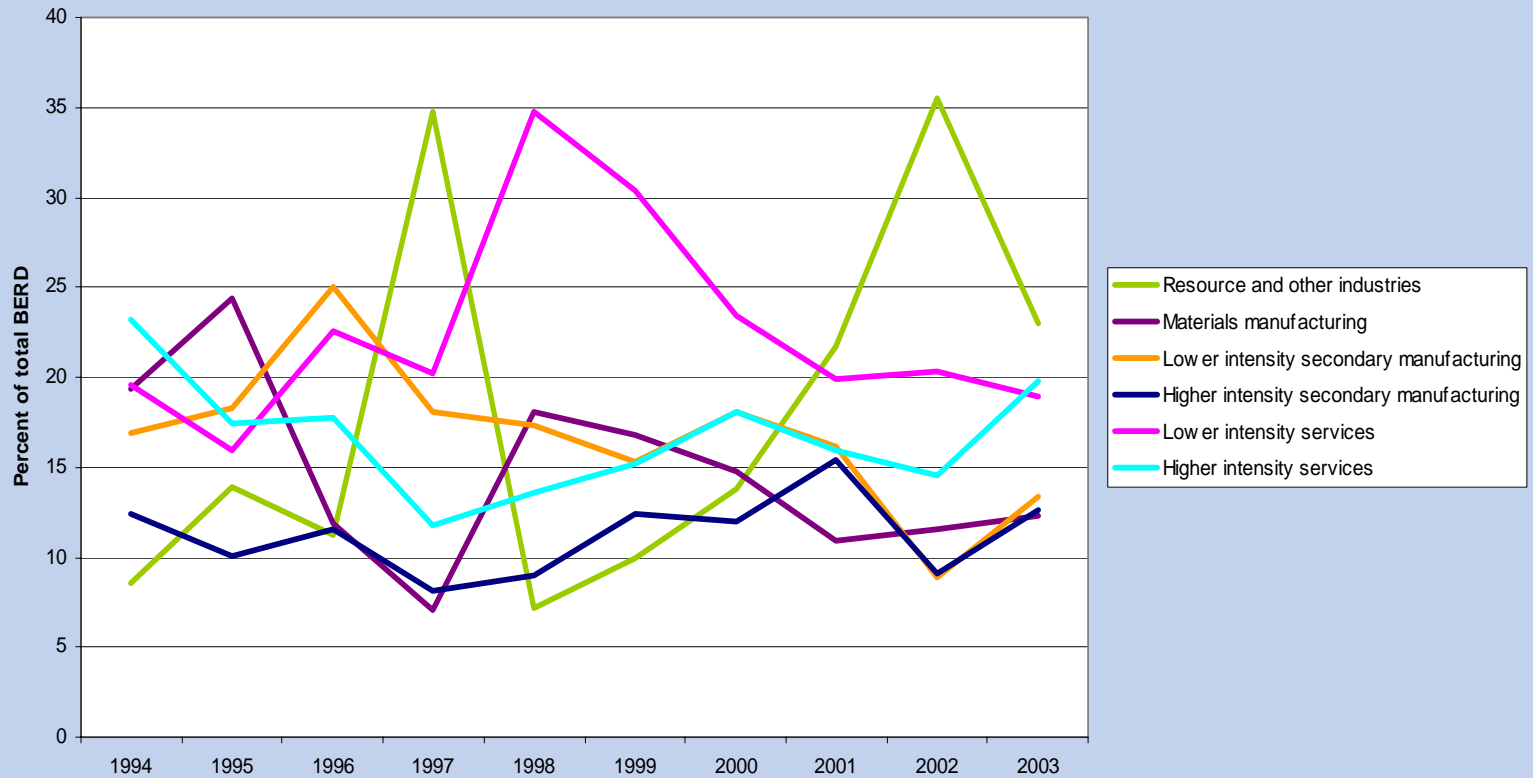


# British Columbia – R&D by sector, 1994-2003



Source: Statistics Canada, RDCI

# Saskatchewan – R&D by sector, 1994-2003



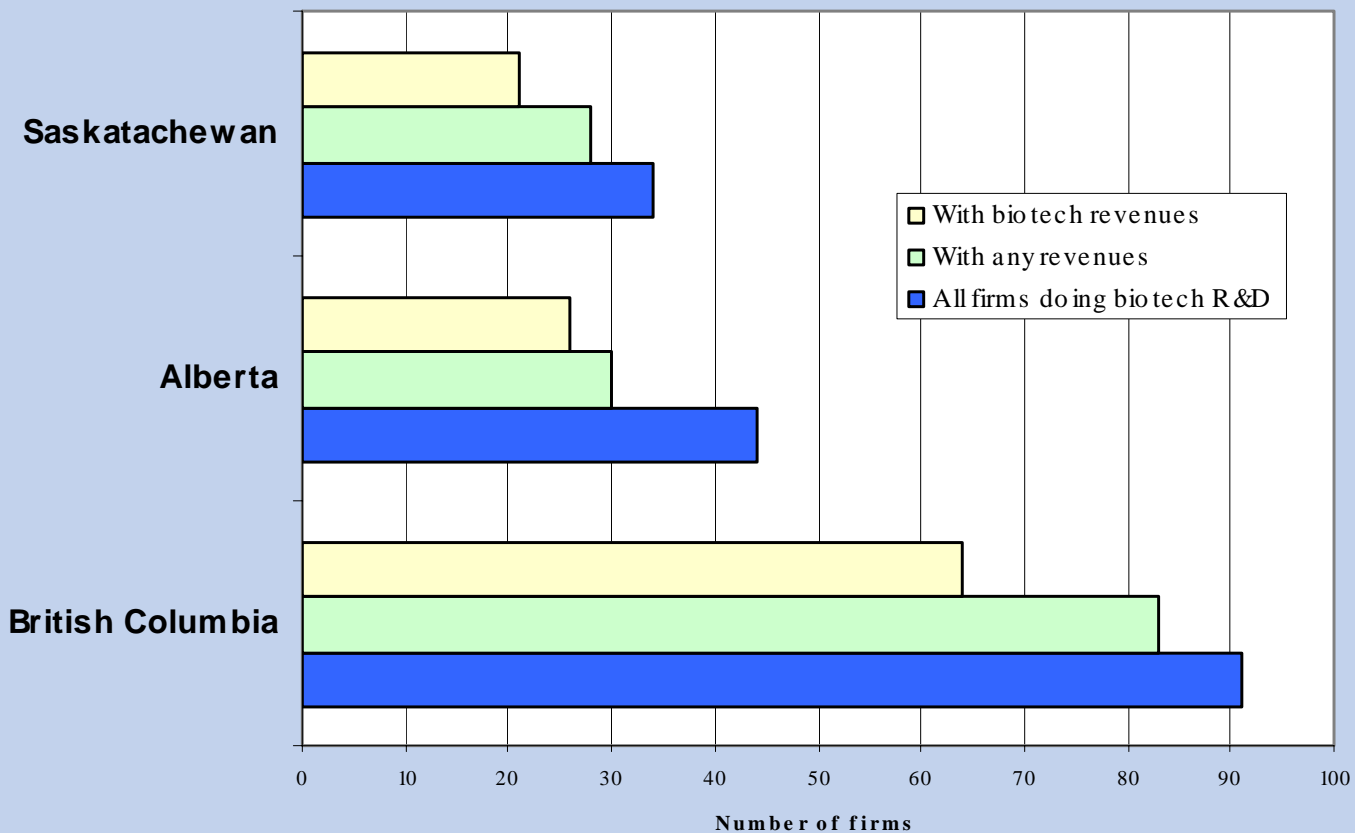
# R&D concentration

Concentration as % of BERD 2003	Number of Enterprises					
	5	10	25	50	75	100
Canada	17	23	34	45	52	56
Atlantic	26	36	57	73	81	86
Quebec	23	32	48	59	65	69
Ontario	24	32	46	56	63	68
Manitoba and Saskatchewan	23	34	57	75	84	89
Alberta	35	52	71	82	87	90
B.C.	30	40	58	70	76	80

## Number of Business R&D performers

	All	R&D \$1 million or more	Large as % of total
Canada	12,992	1,138	8.8
Alberta	678	101	14.9
British Columbia	1,299	138	10.6
Saskatchewan	157	43	27.4

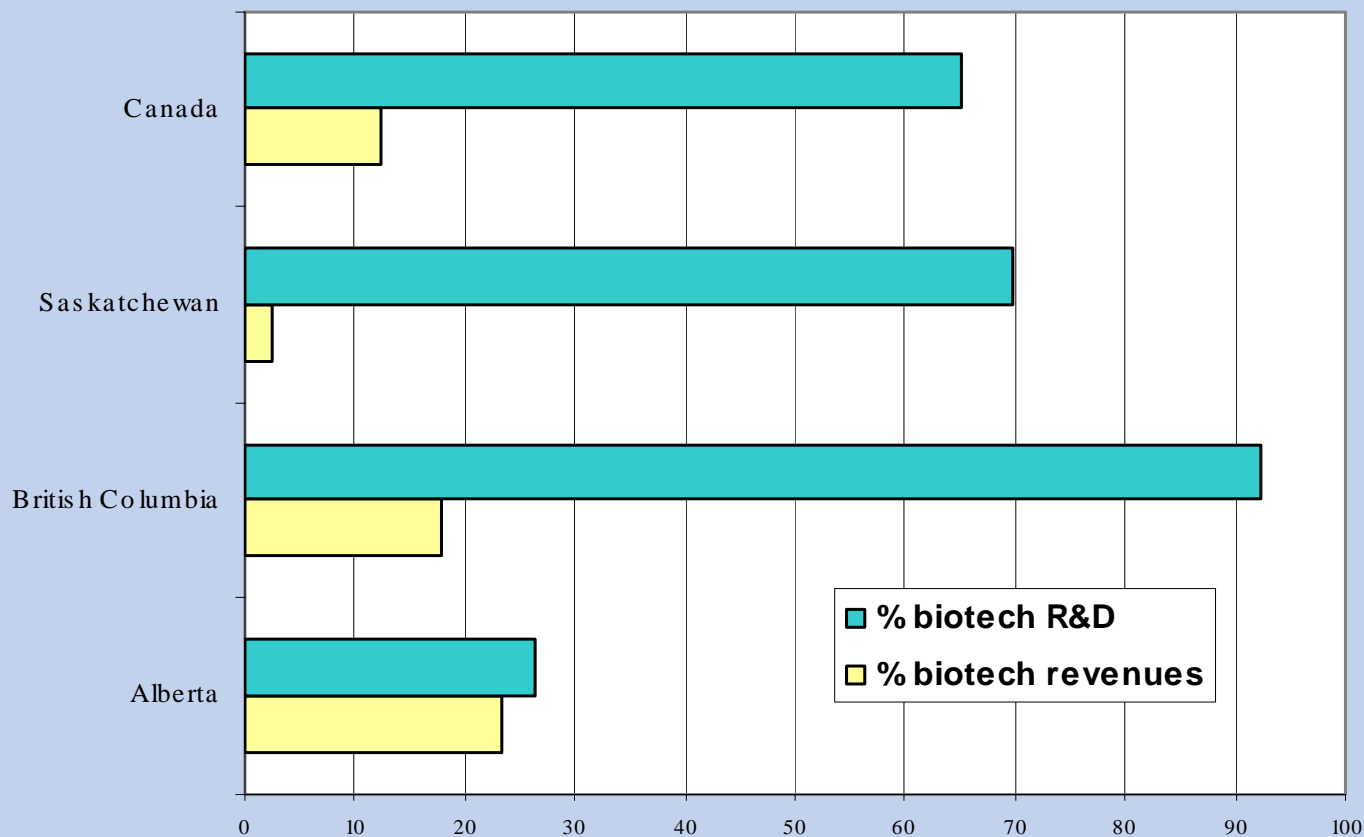
# Number of biotech firms, biotech with revenues and biotech with biotech revenues, 2003



Source: Statistics Canada, BUDS



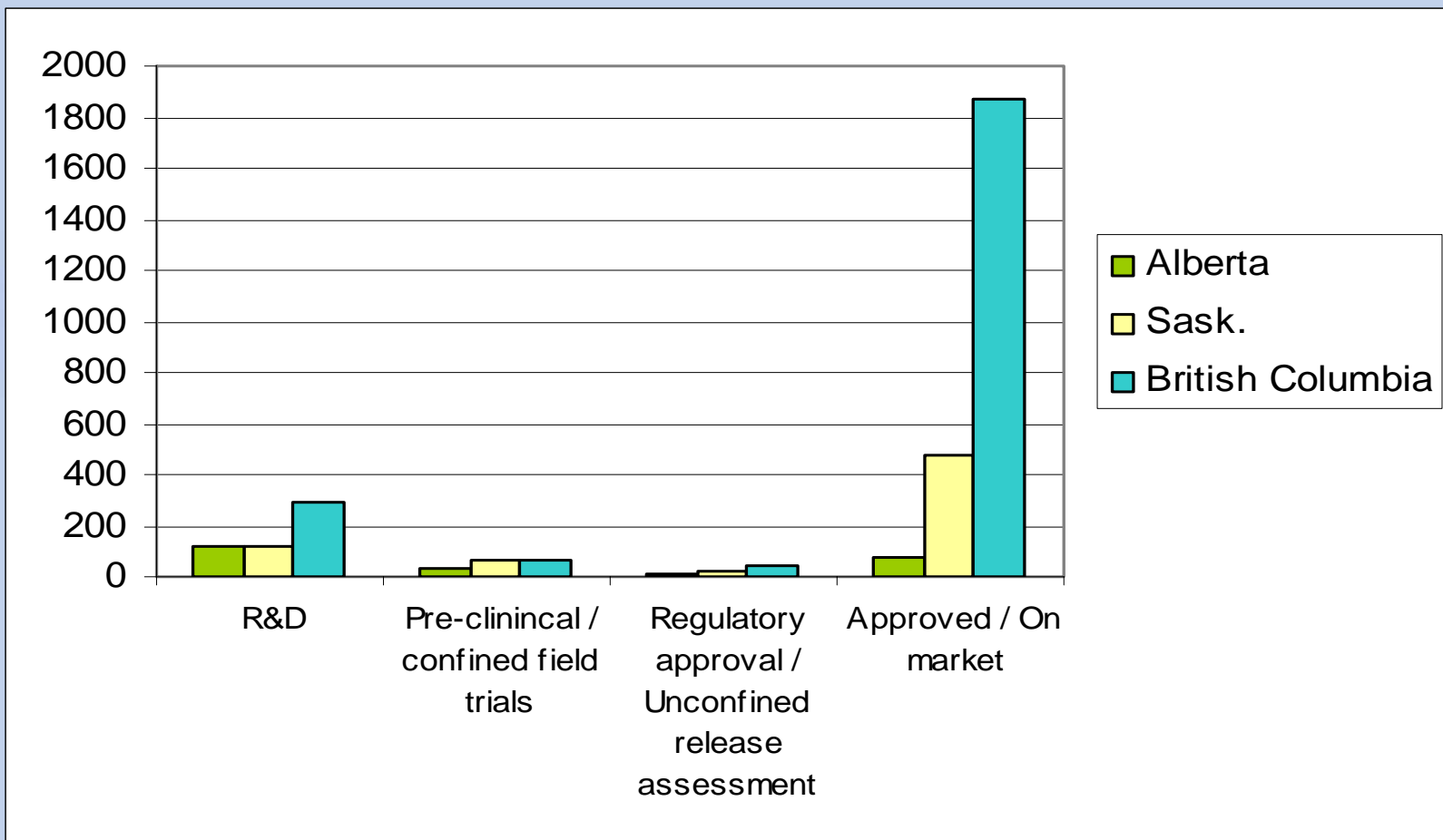
# Biotech as a percent of total R&D expenditures and total revenues of biotech performers, 2003



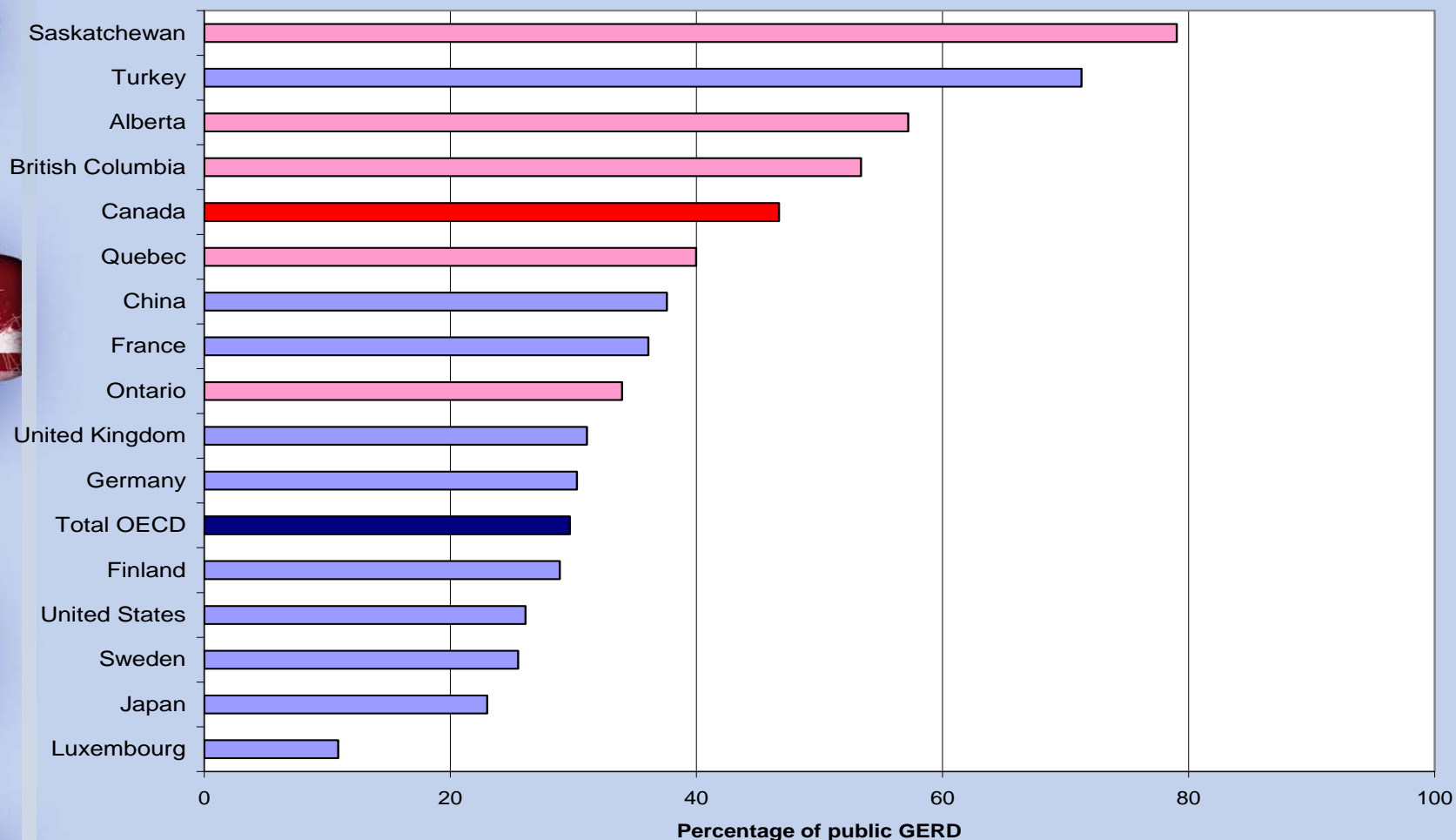
Source: Statistics Canada, BUDS



# Numbers of biotech products, at various stages of development, 2003



# Public R&D as a percent of GERD, 2003



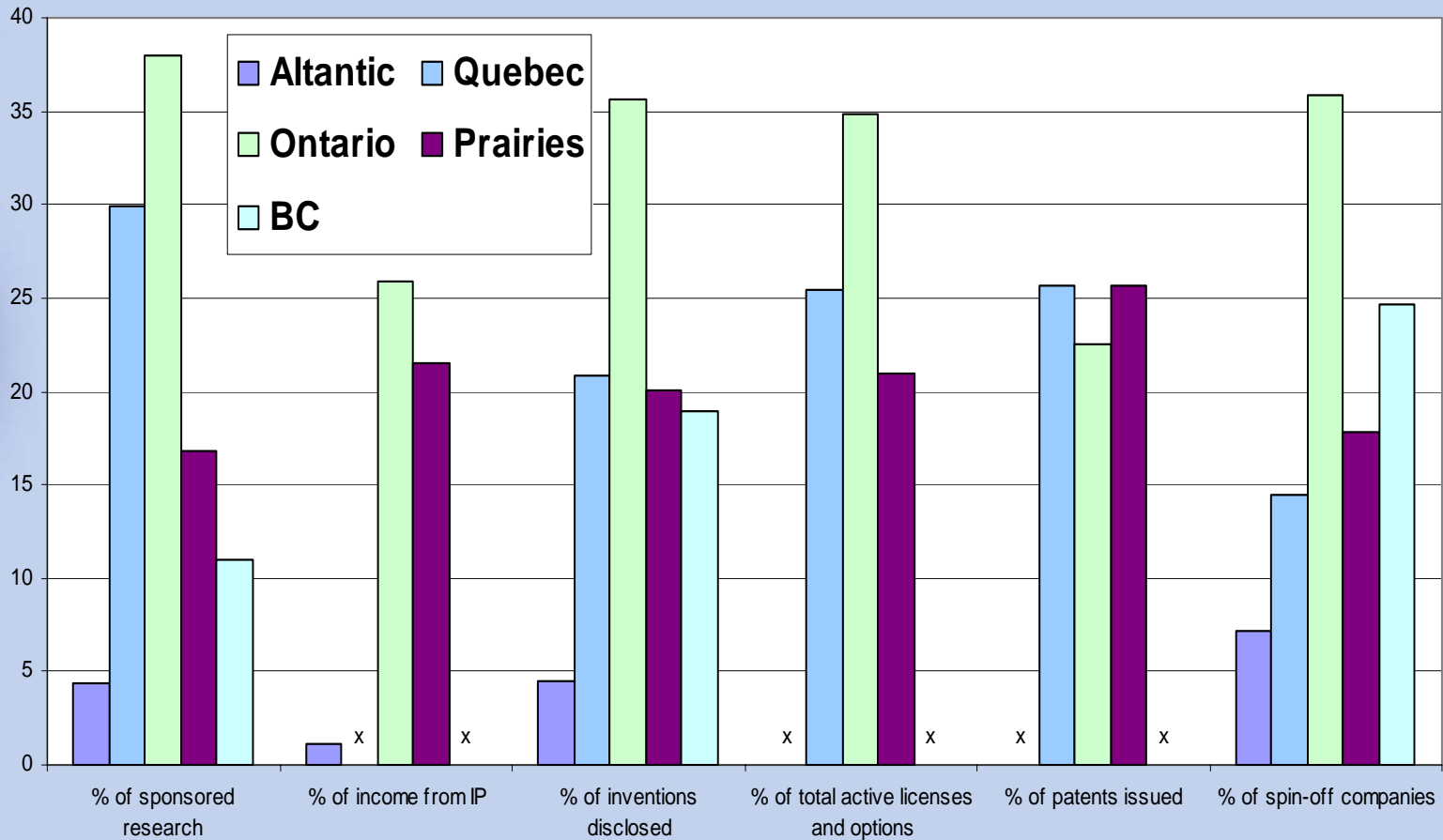
Sources: OECD, MSTI database, 2005 and Statistics Canada



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# Commercialization indicators





# Conclusions

- The western provinces are each different
- Whether business is spending 'enough' on R&D has to be analyzed in a local context
- There are more statistics available to support this analysis
- Statistics Canada can help





# More Information

- Understanding Innovation in Canadian Industry, Queen's University School of Policy Studies, Montreal and Kingston: McGill-Queen's Press (2003)
- National Innovation, Indicators and Policy, Cheltenham: Edward Elgar (2006)
- Catalogue 88-001, Science Statistics, Vol. 29, No.4, Industrial Research and Development, 2001 to 2005, Ottawa: Statistics Canada (June 2005)
- Catalogue 88-202, Industrial Research and Development: 2004 Intentions, Ottawa: Statistics Canada (January 2005)
- Catalogue 88F0006, Working Paper Series, Ottawa: Statistics Canada, available on [www.statcan.ca](http://www.statcan.ca)
- Thompson, Janet, Catalogue 88F0006XIE2004020, Estimates of Canadian research and development expenditure, Canada, 1993 to 2004, and by province 1993-2002
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