

Policy incentives and geography of exports as determinants of innovation in Canadian firms

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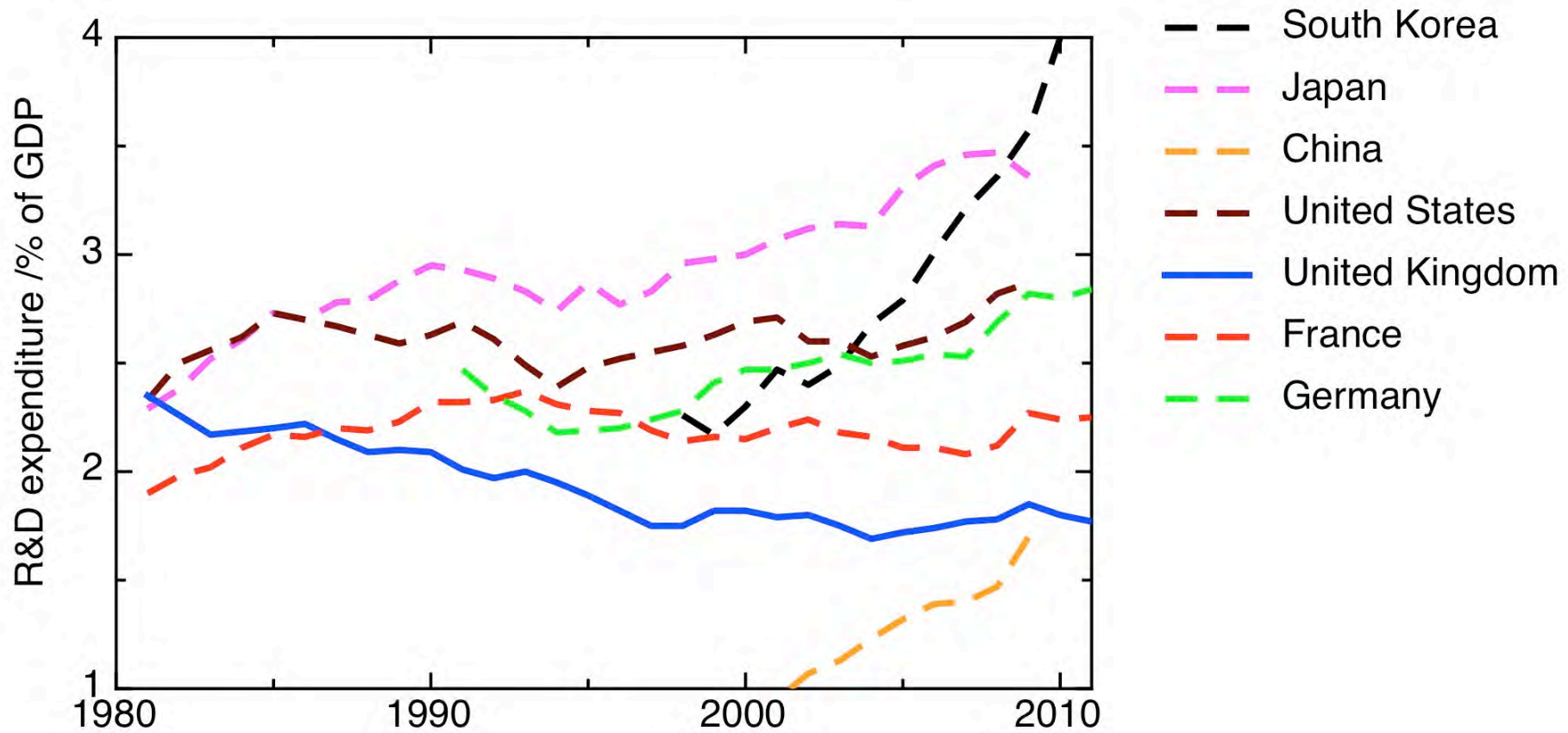


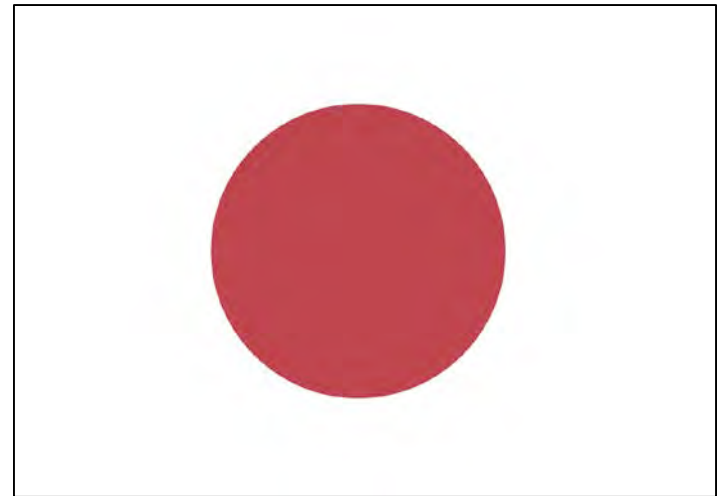
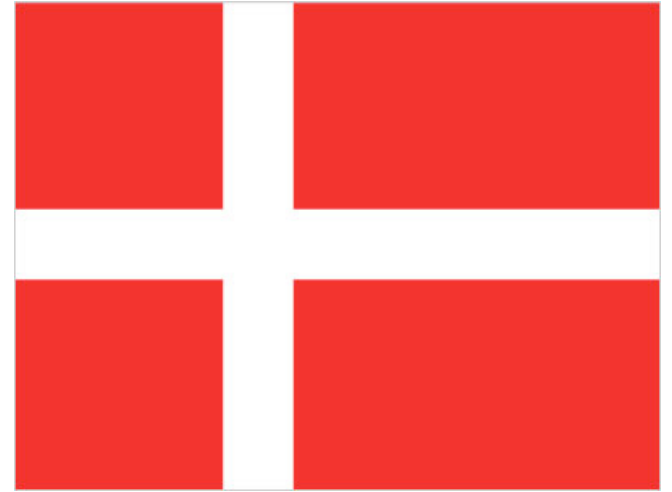


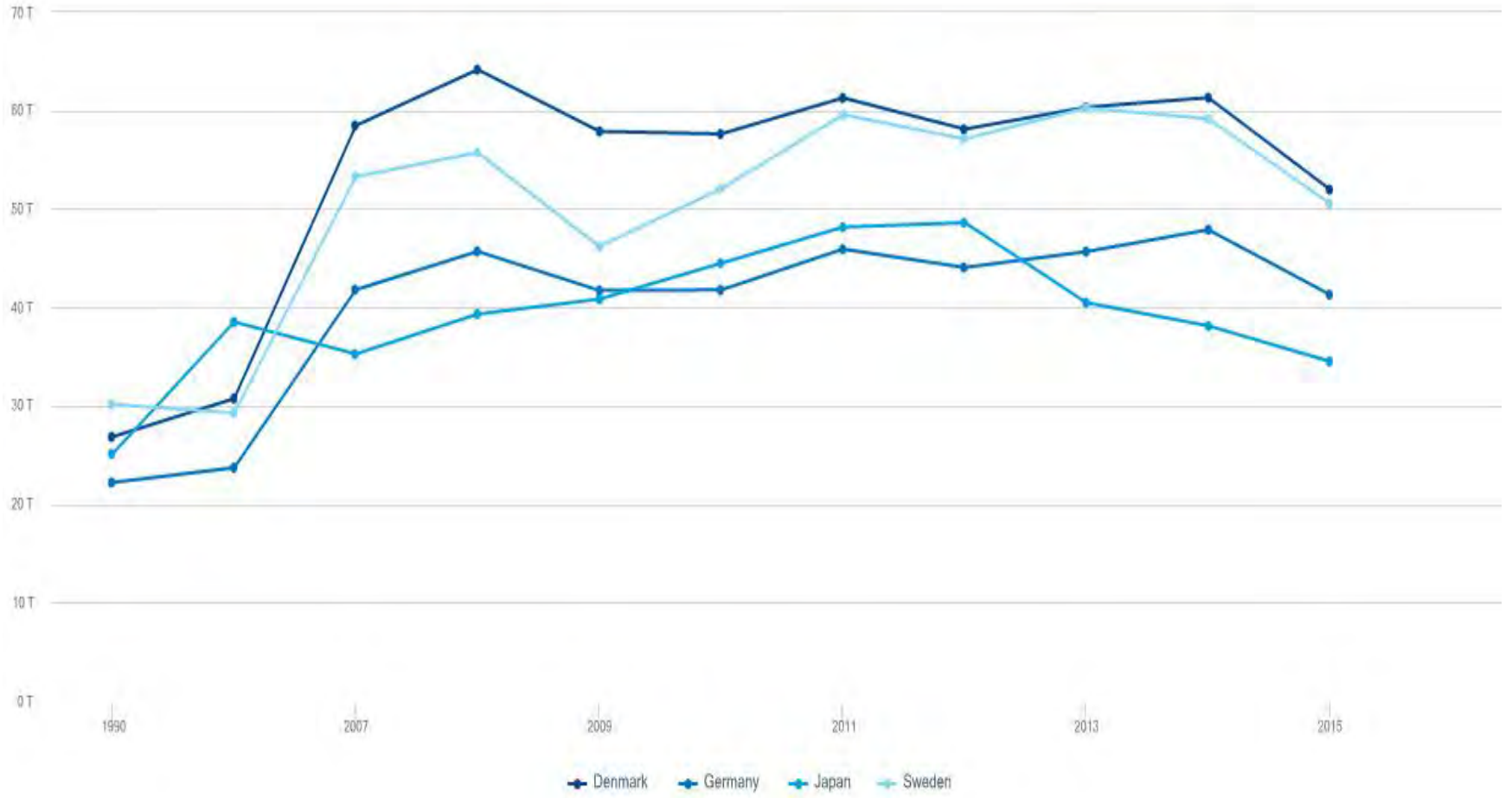
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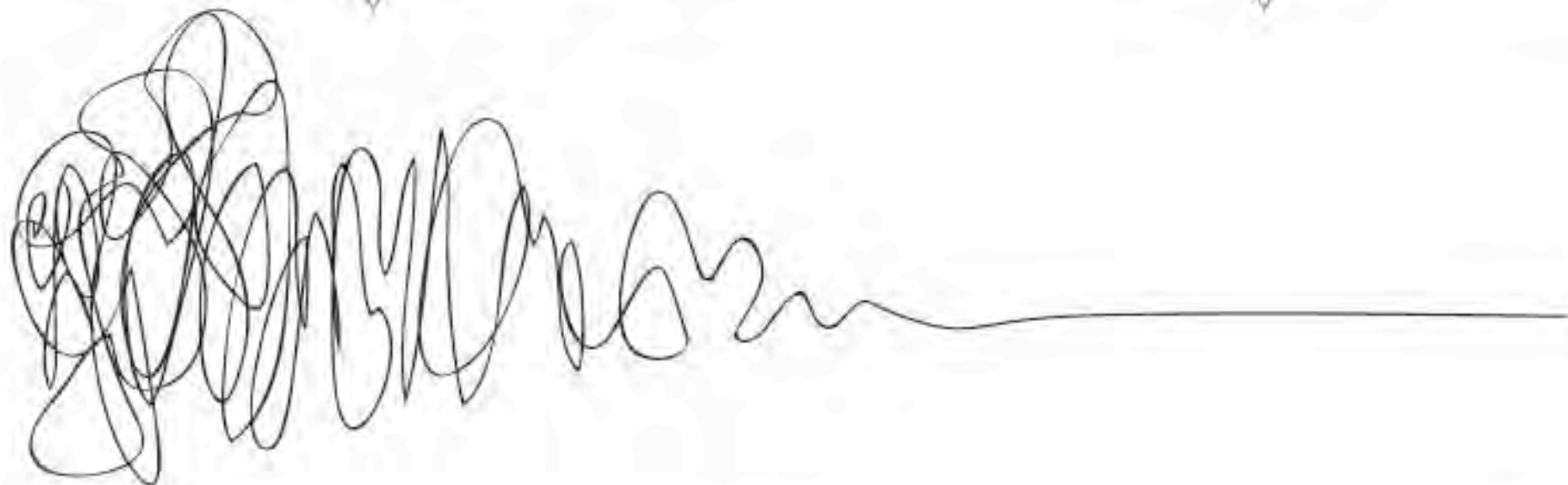




Series : GDP per capita (current US\$)
 Source: World Development Indicators
 Created on: 03/02/2017

Uncertainty / patterns / insights

Clarity / Focus



Research

Concept

Design

The Process of Design Squiggle by Damien Newman



Drivers of innovation

- Firm size
- Highly skilled human resources in the firm
- Use of external sources of knowledge
- Learning from exports
- Use of government programs
- Firm's innovation strategy

Does innovation have an effect on firm performance? ✓



Source of information

- Statistics Canada
 - The Canadian Centre for Data Development and Economic Research (CDER)
 - Survey of Innovation and Business Strategy (2009 and 2012)

Survey of Innovation and Business Strategy, 2012

CONFIDENTIAL once completed
 Si vous préférez ce questionnaire en français,
 veuillez nous appeler au 1-800-461-1062.

Please provide your email address.

Small address

0008 _____

Please verify the business name, address and
 contact name, and corrections needed.

Legal name

0009 _____

Business name

0010 _____

First name

0011 _____

Last name

0012 _____

Address (number and street)

0013 _____

City

0014 _____

Province, territory or state

0015 _____

Postal code or zip code

0016 _____

GENERAL INFORMATION

This information is collected under the authority of the *Statistics Act*, Revised Statutes of Canada, 1985, Chapter 8-19.
COMPLETION OF THIS QUESTIONNAIRE IS A LEGAL REQUIREMENT UNDER THIS ACT.

Survey Purpose

Statistics Canada is undertaking this survey to provide useful statistical information on strategic decisions, innovation activities and operational tactics used by Canadian enterprises. The survey also collects information on enterprise involvement in global value chains.

The information compiled by this survey will be used by the Canadian government to better understand the impact of strategy and innovation decisions and the operational adaptations on the Canadian economy, including productivity and competitiveness. This enables the government to develop policies to support industry in their efforts to improve productivity and competitiveness.

Your information may also be used by Statistics Canada for other statistical and research purposes.

Fax or email transmission disclosure

Statistics Canada advises you that there could be a risk of disclosure during the transmission of information by facsimile or e-mail. However, upon receipt, Statistics Canada will provide the guaranteed level of protection afforded all information collected under the authority of the *Statistics Act*. Note: There is no risk of disclosure if you are completing a web-based questionnaire online.

Confidentiality

The *Statistics Act* protects the confidentiality of information collected by Statistics Canada.

Data-sharing agreements

To reduce respondent burden, Statistics Canada has entered into data-sharing agreements with provincial and territorial statistical agencies and other government organizations, which have agreed to keep the data confidential and use them only for statistical purposes.

Information on confidentiality, data-sharing agreements and record linkages can be found on the last page of this questionnaire.

Record linkages

To enhance the data from this survey, Statistics Canada may combine it with information from other surveys or from administrative sources.

Further information

If you require assistance regarding this survey, please contact Statistics Canada by telephone at 1-800-461-1062.

GENERAL GUIDELINES

Who should complete this questionnaire?

This questionnaire should be completed by the entrepreneur, CEO or a senior manager with thorough knowledge of the enterprise and its strategic vision.

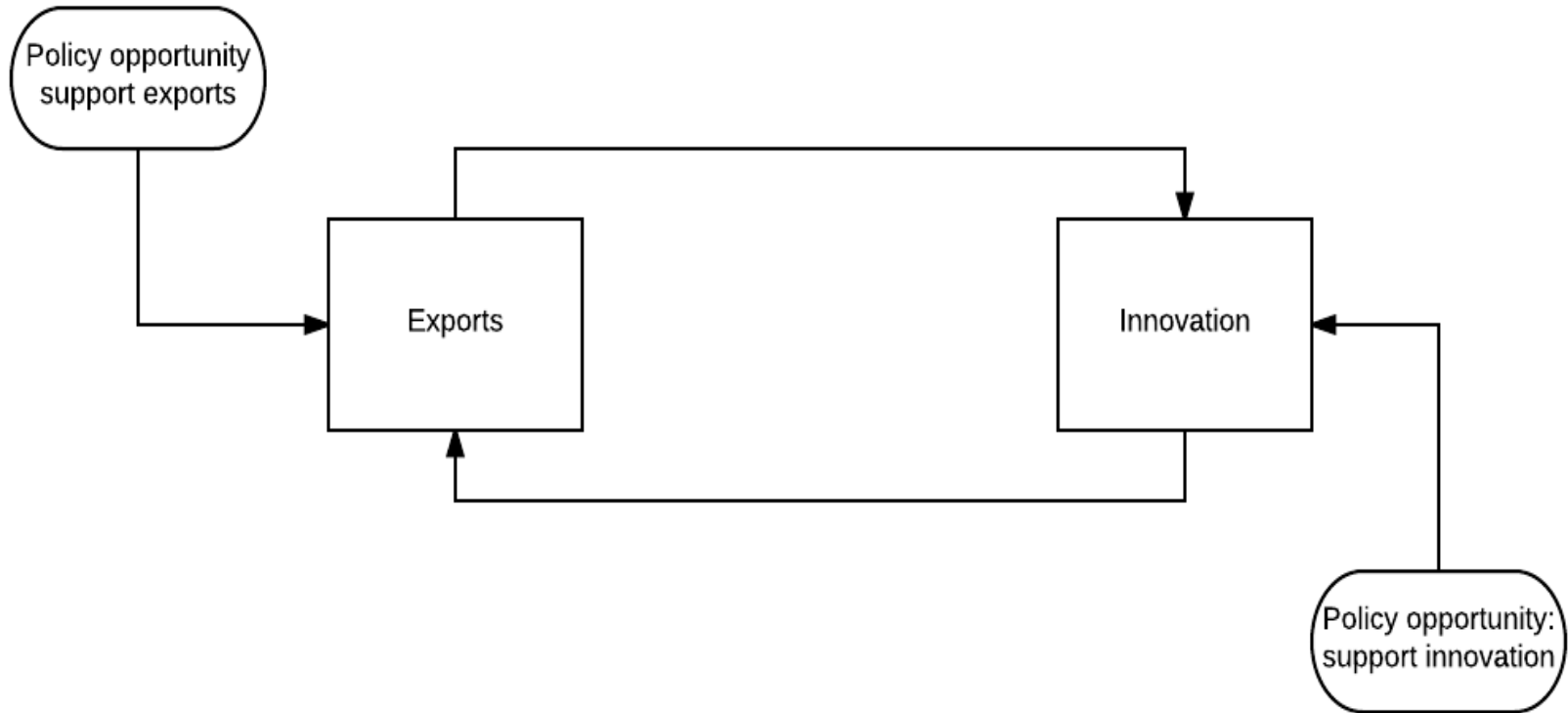
Reporting

Please report amounts in Canadian currency for reference year 2012.

Objective

Contribute to the literature by analyzing the impact of public policy initiatives on innovation by firms, and the interplay with the geography of exports, differentiating their effects for manufacturing and service sectors in Canadian firms for the years 2009 and 2012.

Business dynamics model between exports, innovation and policy

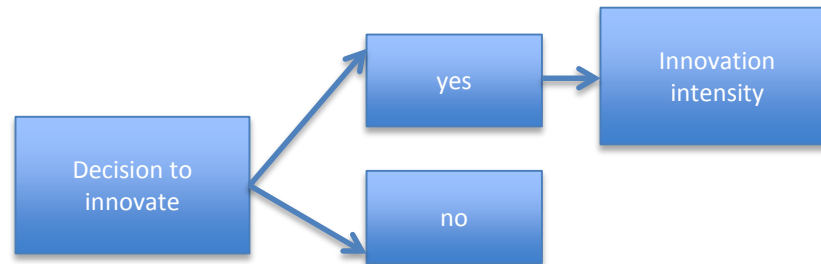


Methodology

- Analyzed only manufacturing and services
 - high-tech manufacturing, low-tech manufacturing, KIBS, or traditional services
 - Sample for 2009 contains 4,024 firms
 - 2,878 manufacturing firms and 957 services firms
 - Sample for 2012 contains 4,285 firms
 - 2,533 manufacturing firms and 1,412 services firms.

Model

- Two stage model similar to that of Crepon, Douguese, Mariesse (1994).



$$d\text{Innovate}_i = X_i \beta_1 j_{i1}, \dots, j_{in} + \beta_2 \dots (\text{eq. 1.1})$$

$$\log\text{Innovate}_i = X_i \beta_1 j_{i1}, \dots, j_{in} + \beta_2 \dots (\text{eq. 1.2})$$

Decision to innovate	2009			2012		
	All sample	Manufacturing	Services	All sample	Manufacturing	Services
Micro firm	0.262***	0.271***	0.085	0.343***	0.290**	0.322*
	(0.07)	(0.08)	(0.15)	(0.10)	(0.13)	(0.19)
Small firm	0.157***	0.136	0.066	0.311***	0.231*	0.355**
	(0.06)	(0.09)	(0.13)	(0.09)	(0.13)	(0.16)
Medium firm	0.189***	0.188*	0.197	0.096	0.056	0.098
	(0.07)	(0.10)	(0.17)	(0.09)	(0.14)	(0.21)
Canada headquarter	0.179	0.08	0.916**	0.518**	0.644***	0.026
	(0.20)	(0.22)	(0.38)	(0.21)	(0.21)	(1.13)
US or Europe headquarter	0.186	0.126	0.808**	0.539**	0.695***	0.028
	(0.21)	(0.23)	(0.39)	(0.22)	(0.23)	(1.10)
International competitors	0.064	0.059	0.124	0.148***	0.133**	0.166
	(0.05)	(0.05)	(0.13)	(0.06)	(0.06)	(0.12)
Subsidiary in US or Europe	0.159***	0.101*	0.198	0.161**	0.149*	0.257**
	(0.06)	(0.05)	(0.14)	(0.07)	(0.08)	(0.10)
Offshoring products	0.174***	0.209***	0.721**	0.093	-0.03	0.309
	(0.07)	(0.08)	(0.30)	(0.08)	(0.09)	(0.22)
Offshoring services	0.133	-0.048	0.272**	0.243***	0.295***	0.172
	(0.09)	(0.08)	(0.13)	(0.08)	(0.09)	(0.13)
Government grants	0.127**	0.094	0.237	0.104**	0.092	0.128
	(0.06)	(0.08)	(0.17)	(0.05)	(0.09)	(0.11)
Tax credits	0.371***	0.426***	0.141	0.271***	0.273***	0.310***
	(0.05)	(0.05)	(0.13)	(0.04)	(0.05)	(0.08)
Export incentives	0.063	0.075	0.004	0.033	0.053	-0.04
	(0.10)	(0.08)	(0.28)	(0.09)	(0.10)	(0.20)
Technical assistance (IRAP)	0.245**	0.325***	0.025	0.292***	0.397***	0.037
	(0.11)	(0.11)	(0.23)	(0.11)	(0.15)	(0.21)
athrho	-0.934***	-1.227***	-0.512**	-0.625***	-0.809***	-0.301
	(0.21)	(0.14)	-0.205	(0.14)	(0.20)	(0.22)
Insigma	0.876***	0.908***	0.790***	0.761***	0.732***	0.773***
	(0.07)	(0.06)	-0.0622	(0.06)	(0.08)	(0.08)
Constant	-1.952***	-1.317***	-2.211***	-2.437***	-2.162***	-1.744
	(0.26)	(0.24)	(0.42)	(0.27)	(0.24)	(1.18)
Observations	4,024	2,878	957	4,285	2,533	1,412

Innovation intensity	2009			2012		
	All sample	Manufacturing	Services	All sample	Manufacturing	Services
Government grants	0.161 (0.12)	0.152 (0.14)	0.052 (0.39)	0.231** (0.11)	0.19 (0.13)	0.552** (0.25)
Tax credits	-0.165 (0.19)	-0.354** (0.16)	0.245 (0.25)	0.05 (0.12)	-0.021 (0.16)	0.269 (0.21)
Export incentives	0.198 (0.20)	0.213 (0.21)	0.636 (0.68)	-0.224 (0.18)	-0.158 (0.23)	-0.291 (0.31)
IRAP	-0.486** (0.21)	-0.679*** (0.22)	-0.179 (0.70)	-0.685** (0.29)	-0.671*** (0.24)	-0.42 (0.52)
Canadian market	-0.106 (0.11)	-0.168 (0.12)	-0.171 (0.22)	-0.055 (0.14)	-0.105 (0.15)	0.058 (0.26)
Provincial market	-0.210** (0.10)	-0.178 (0.13)	-0.197 (0.22)	-0.241** (0.12)	-0.172 (0.13)	-0.423** (0.20)
Local market	-0.087 (0.11)	-0.056 (0.11)	-0.157 (0.22)	-0.370*** (0.11)	-0.409*** (0.10)	-0.196 (0.21)
US market	0.003 (0.11)	-0.14 (0.13)	0.384 (0.24)	0.028 (0.12)	0.048 (0.14)	0.095 (0.28)
European market	0.371*** (0.12)	0.286** (0.13)	0.757*** (0.28)	0.273** (0.13)	0.237 (0.17)	0.417 (0.36)
Asian market	0.286* (0.16)	0.14 (0.14)	0.56 (0.35)	0.378** (0.16)	0.395*** (0.14)	0.129 (0.47)
Constant	10.10*** (1.14)	8.982*** (1.00)	6.980*** (1.91)	10.32*** (0.67)	9.008*** (0.96)	9.960*** (1.12)
Observations	4,024	2,878	957	4,285	2,533	1,412

Policy program effectiveness

Government program	2007-2009	2010-2012
Tax credits (M)	✓ (M)	✓ (M&S)
Information and technical assistance programs	✓ (M)	✓ (M)
Government grants	✓	✓
Training programs	X	X
Hiring program for recent graduates	X	X
Access to government research facilities	X	X
Export incentives and services	X	X
Market information services	X	X
Other type of government program	X	X

Geography of exports

Region	2007-2009	2010-2012
Europe	✓ (M&S)	✓
Asia Pacific	✓	✓ (M)
United States		
Local markets	X	X (-M)
Rest of province or territory	X (-)	X (-S)
Rest of Canada		

Discussion

- Public policy initiatives are playing an important role in fostering innovation in Canadian firms.
- These initiatives are starting to play a key role in the service sector.
- The search for foreign markets is also important for innovation, but there appears to be a selection effect, as engaging in European and Asian markets is positive and significant for innovation.
- Our results have important policy implications in terms of the interplay of public policy incentives, the geography of exports, and innovation differentiating by services and manufacturing.

Questions and feedback

Thanks!

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