

Economic Impacts of Canadian Producer-Funded R&D

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INTRODUCTION

Producer check-offs are a major source of funding for agricultural research and development (R&D) in a number of countries and for a number of crops. A good example of this is Canadian pulse crop R&D, which is financed largely by Canadian pulse growers.

As the largest world pulse exporter, Canada accounts for roughly 60% of the world trade in peas and lentils. Thus, Canadian pulse R&D activity can be expected to have a significant impact on international markets.

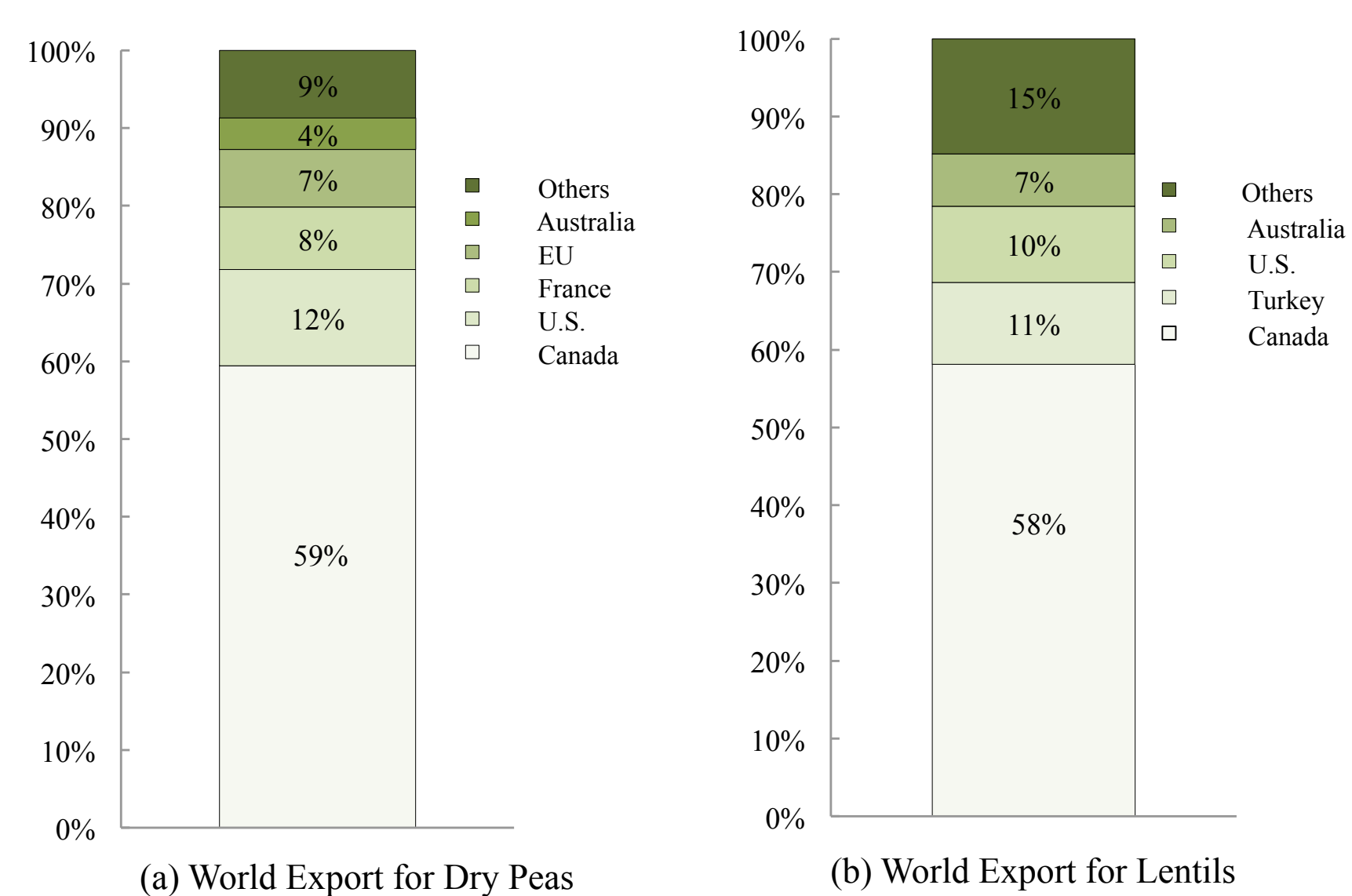
OBJECTIVES

The goals of this study are to:

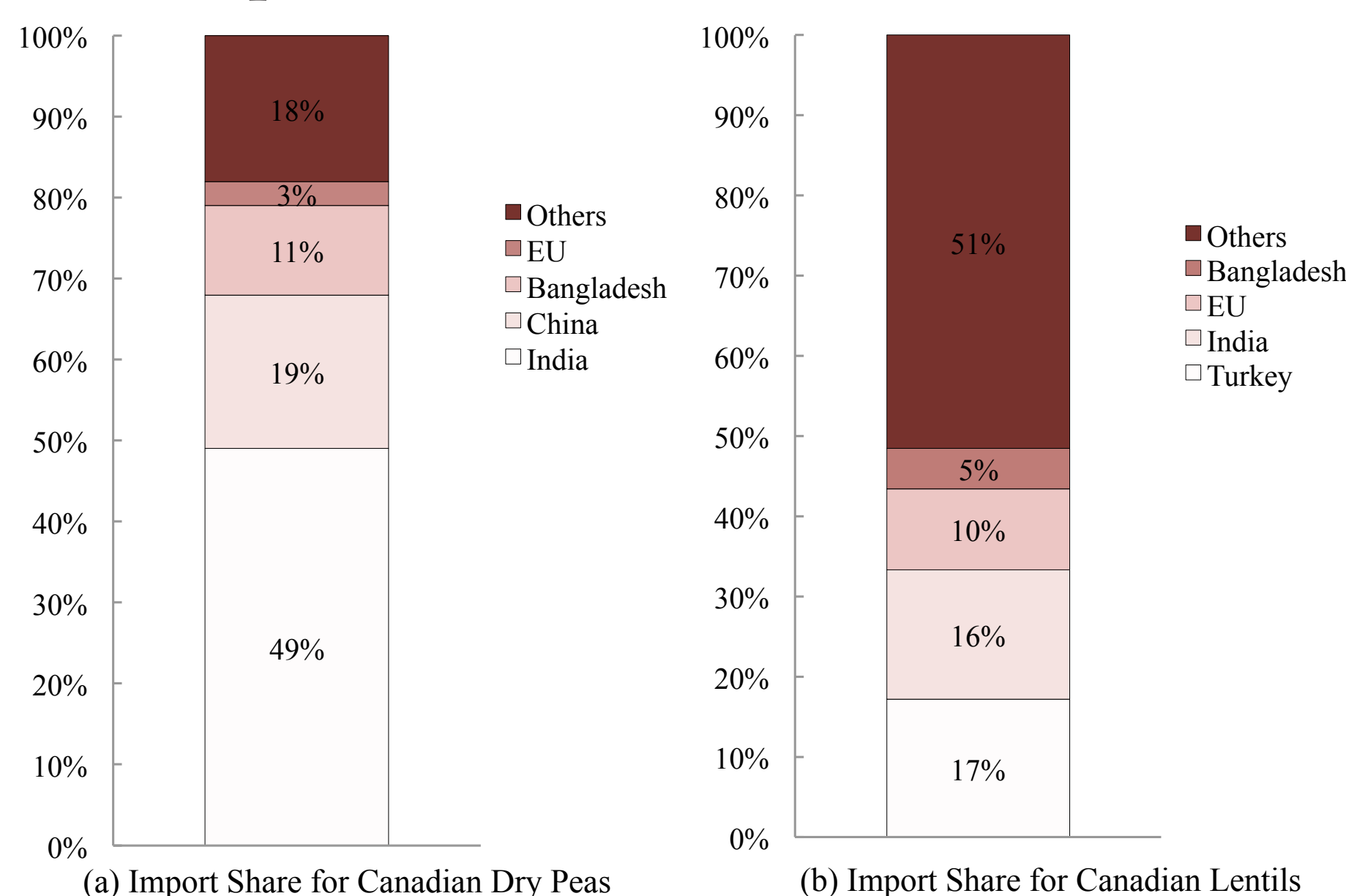
1. Examine the impact of Canadian pea R&D investment on the world pulse prices, and supply/demand quantities.
2. Examine the distribution of Canadian pea R&D benefits among consumers and producers in Canada and importing countries.
3. Examine the impact of Canadian pea R&D investment on the allocation of pulse production around the world.

WORLD PULSE MARKET

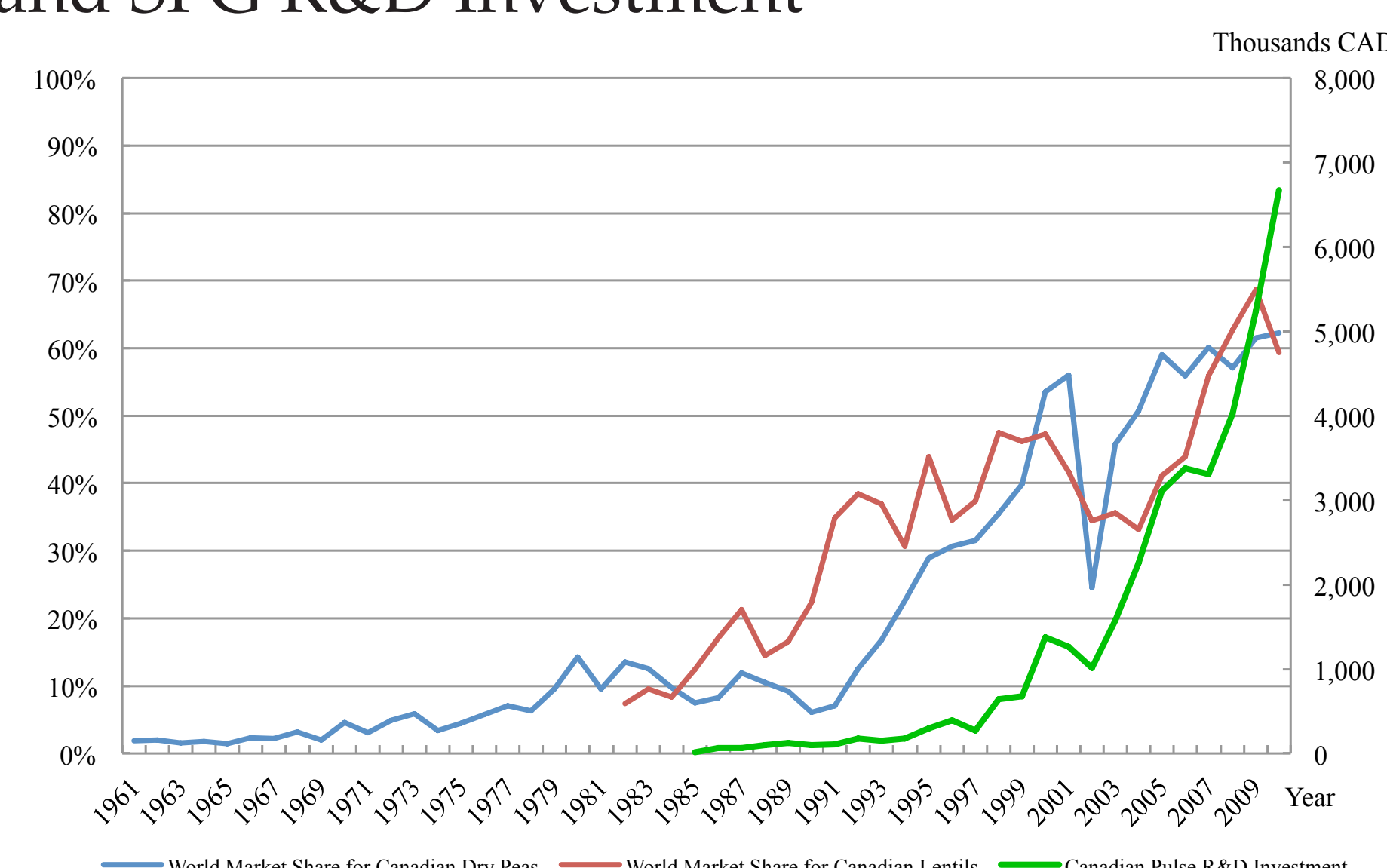
World Pulse Export



Import of Canadian Pulses



World Market Share of Canadian Pulses and SPG R&D Investment



The importance of R&D can be seen in the positive relation observed between producer-funded R&D investment and the world market share.

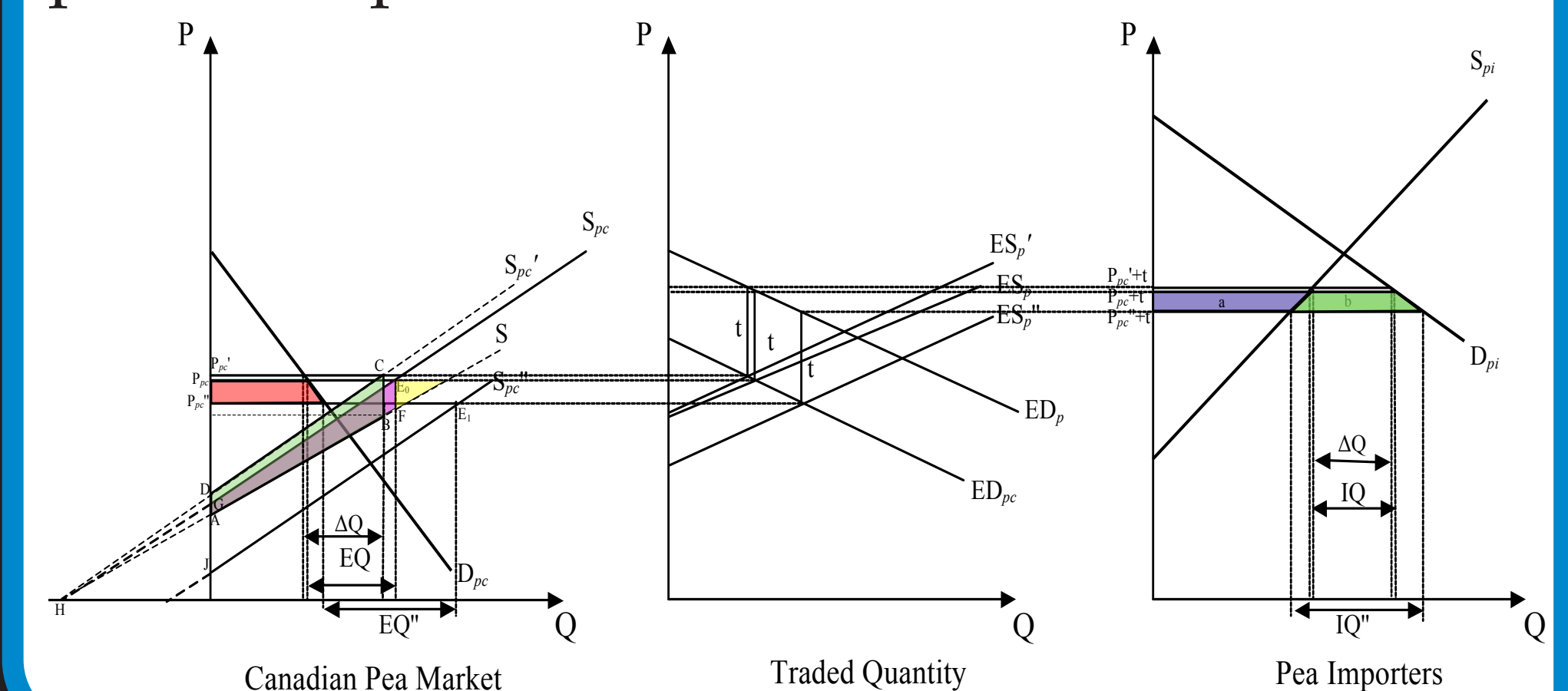
METHODOLOGY

The analysis starts by constructing a multi-region, multi-product partial equilibrium model (PEM) that captures market connections between different crops and different regions with an emphasis on the welfare and production impacts of Canadian pea research to groups in connected markets.

In addition to determining the equilibrium prices and quantities in different regions and for different crops, the model calculates the welfare allocated to each region by using the normalized quadratic indirect profit function and the normalized quasilinear utility function.

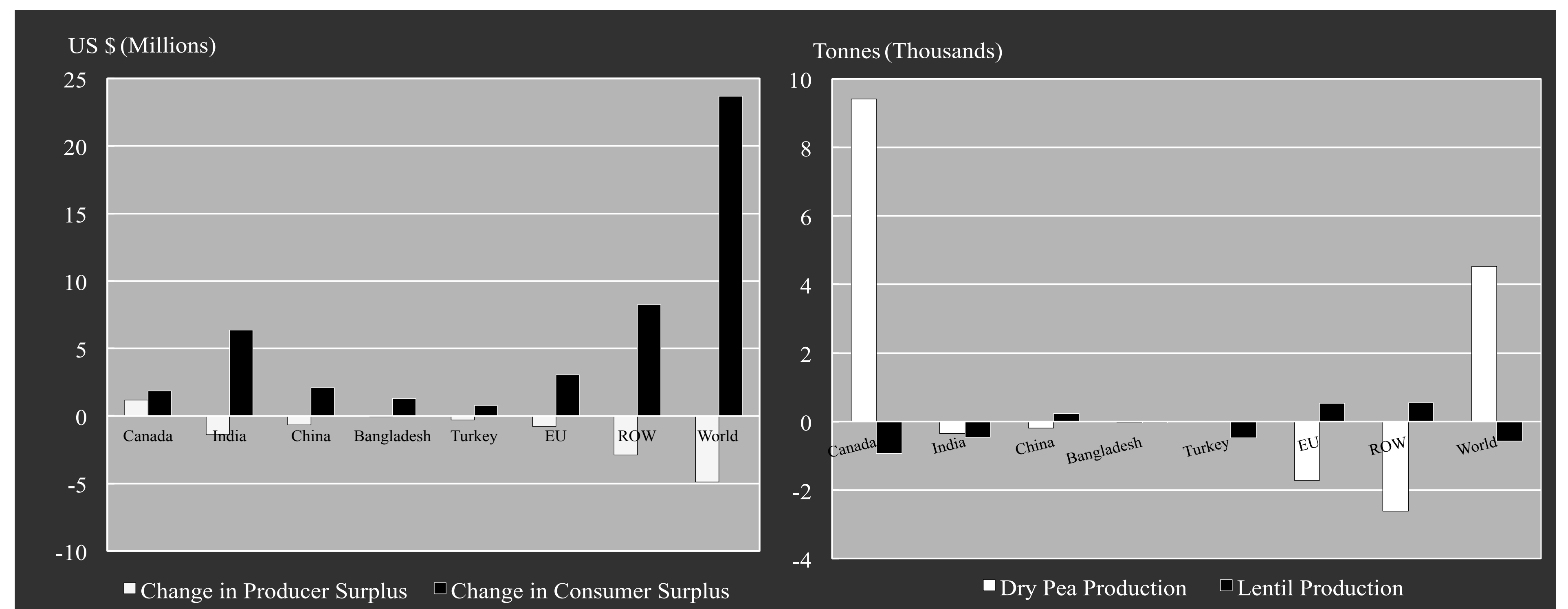
ANALYTICAL FRAMEWORK

The model is divided into seven regions (Canada, India, China, Bangladesh, Turkey, EU and ROW), and it captures the interaction of four major markets of Canadian agricultural products: peas, lentils, wheat, and canola.



RESULTS

The following diagrams demonstrate the welfare effects and the production change associated with a 10% increase in the check-off ratio of the Canadian pea sector.



Impact of Canadian Pea R&D Investment

	Canada	India	China	Bangladesh	Turkey	EU	ROW	World Total
Δ Total Surplus (US\$)	3,102,425	5,101,984	1,483,697	1,232,497	495,693	2,285,425	5,447,734	19,149,455
Δ PS (US\$)	1,208,775	-1,384,263	-654,988	-68,126	-308,862	-809,362	-2,968,362	-4,985,188
Δ CS (US\$)	1,893,651	6,486,247	2,138,685	1,300,623	804,555	3,094,787	8,416,096	24,134,642
Δ Production (tonne)								
Peas	9,669	-349	-199	-8	1	-1,760	-2,686	4,667
Lentils	-965	-463	238	-29	-486	548	563	-593
Wheat	15,321							
Canola	7,884							

Source: Calculated by the author based on FAOSTAT data.

CONCLUSIONS

1. The increase of Canadian pea R&D investment reduces pea prices in each region and increases world total demand and supply for peas.
2. Consumers in all regions are better off from the increase of Canadian pea R&D investment.
3. World total producer surplus decreases, and all overseas producers are worse off from the increase of Canadian pea R&D investment.
4. Canadian producers are better off from its pea R&D investment, although some benefits flow to consumers (domestic and overseas).
5. Although overseas pea production declines, world pea production increases due to the increase in Canadian pea production.
6. The concentration of pea production in Canada has the potential to raise food security issues in developing countries.

REFERENCE

- [1] G. Moschini, H. Lapan, and A. Sobolevsky [2000]. Roundup Ready Soybeans and Welfare Effects in the Soybean Complex. *Agribusiness*

ACKNOWLEDGEMENT

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