

Does International Trump Domestic Trade? The Seed Potato Market in Canada

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Introduction

- Three disease outbreaks in potatoes have shut down the Canada/US border for Canadian seed potatoes in the last 20 years:
 - Potato Virus Y necrosis (PVYn) from 1989-1992;
 - Potato wart in 2000; and
 - Golden Nematode in 2007.

Introduction

- Calls by the US for greater controls on seed entering the US (T&P costs).
 - Province of Origin Labeling (POOL)
 - Ban on bulk shipments with a maximum package weight of fifty lbs.
- Tracing systems beyond the one-step forward one step backward paper system.

Introduction

- Traceability systems must be in place for the sale of seed potatoes to all buyers.
 - Additional requirements will result in more T&P costs for all seed producers in Canada.
- Is it worth the increased cost to domestic trade within Canada?

The US Export Seed Potato Market

- The US export market is small and static in comparison to the domestic market.
- Alberta and New Brunswick export the greatest share of seed potatoes into the U.S. largest

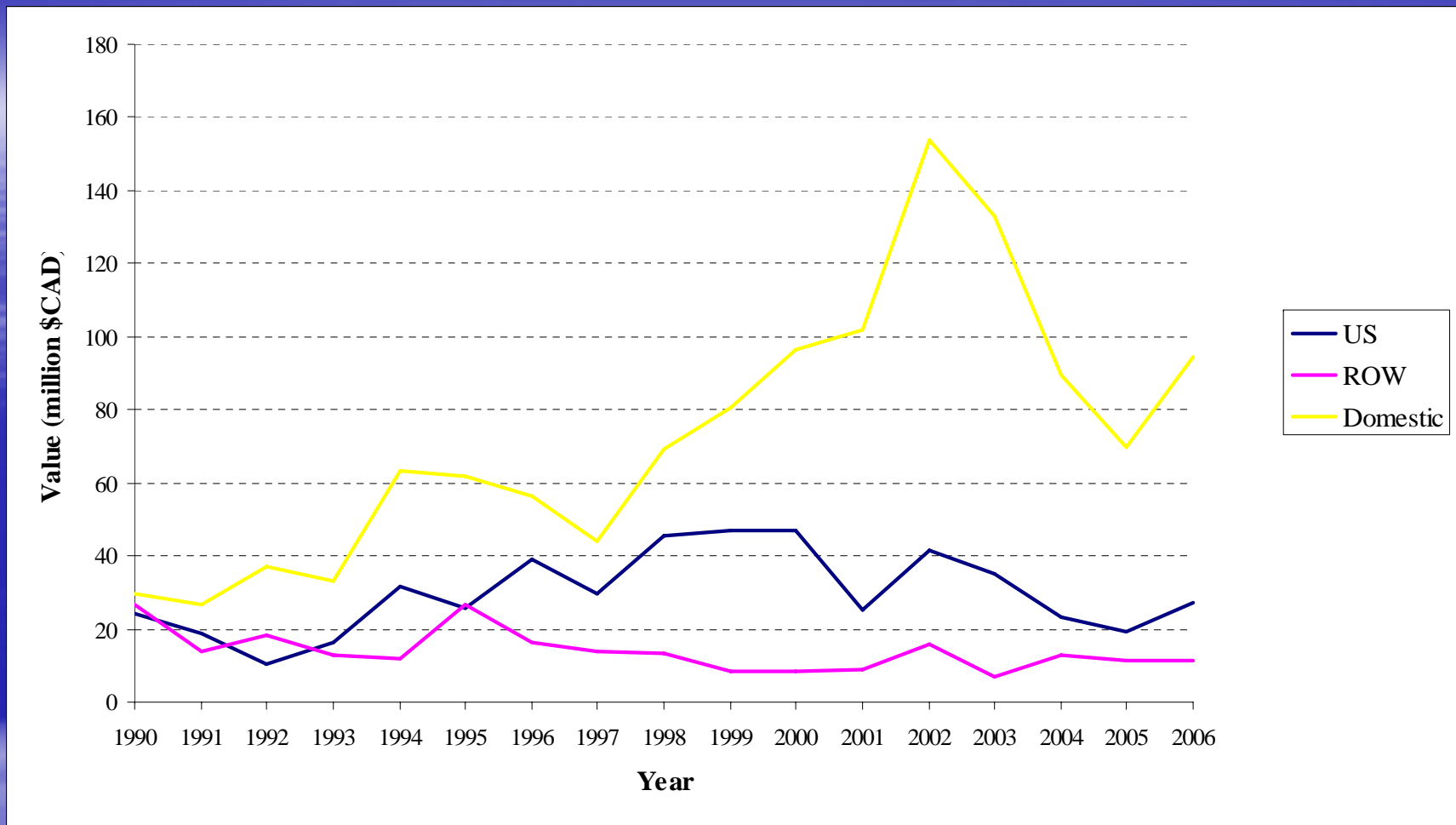


Figure 1. International exports and domestic trade values for Canadian seed potatoes

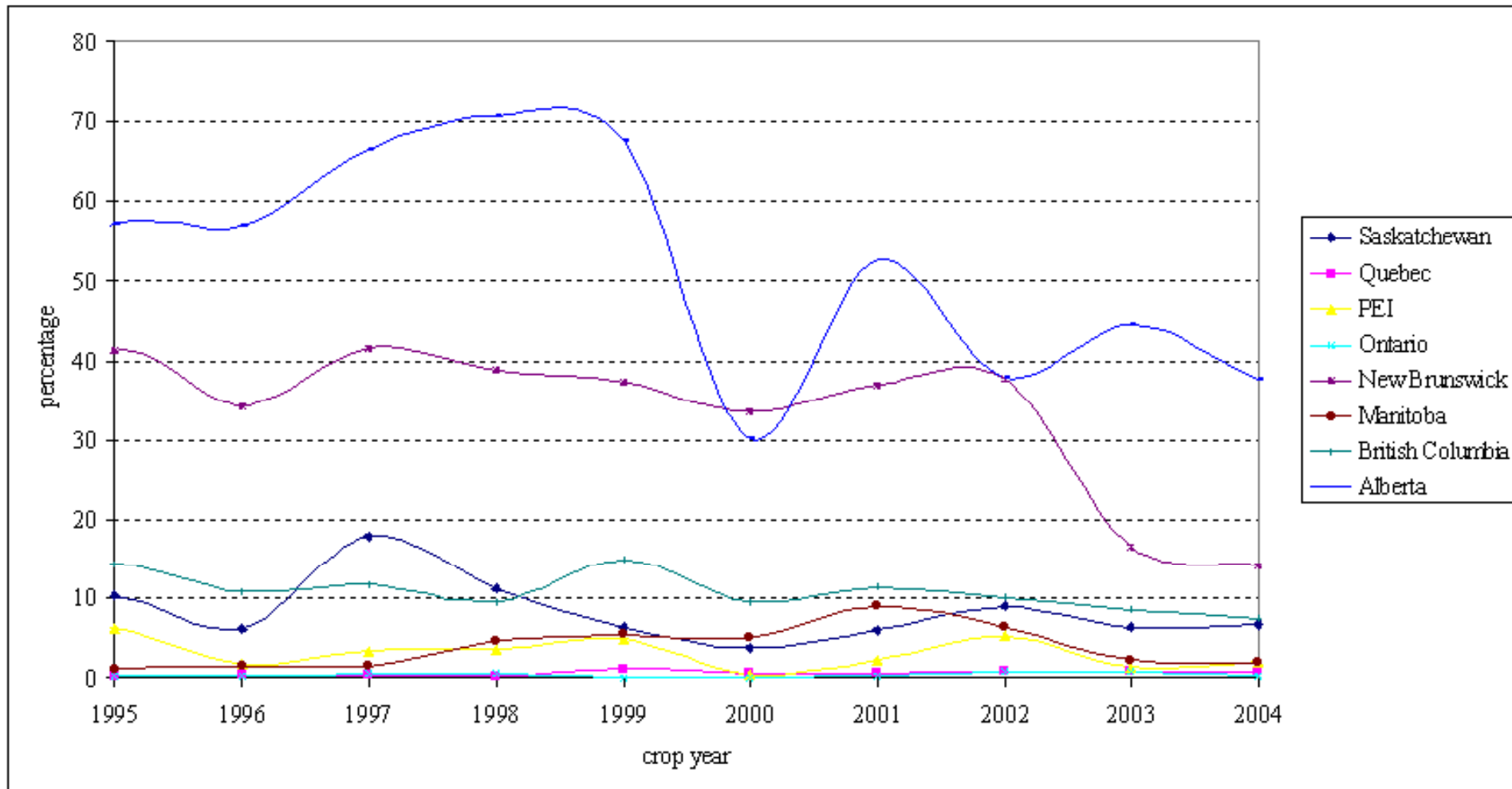


Figure 2. Canadian seed potatoes exported to the US by province

Is it worth Keeping the Market if Tracing systems cause a decline in domestic trade?

- Spatial Equilibrium trade model.
- Three Canadian regions demand and supply: Atlantic, Central, and Western.
- U.S. and Rest of the World (ROW) import demand functions for each of the three Canadian regions

Model Development and Validation

- Estimated supply, demand, and import demand elasticities.
- T&P costs estimates: grain and fresh produce adjusted for potato production and packaging costs.
- Positive mathematical programming was used to calibrate both domestic and international trade flows

Model Development and Validation

Table 1. Baseline model results and average price and quantity data used to calibrate model

Results	<u>Atlantic Canada</u>		<u>Central Canada</u>		<u>Western Canada</u>	
	Actual	Est.	Actual	Est.	Actual	Est.
Price (\$CAD/cwt)	10.88	10.08	11.18	12.47	13.02	11.28
Quantity (million lbs.)						
Local demand	33.24	34.08	20.64	19.81	27.51	28.78
Local supply	59.03	53.40	11.54	13.29	57.47	47.41
U.S. exports	8.97	8.98	0.18	0.18	18.23	18.22
ROW exports	3.57	3.58	0.03	0.03	0.43	0.43

Note: The largest deviation is for Western Canada supply (19%)

Tracing Cost Scenarios Analyzed

- Low cost \$0.04/cwt (rubber stamp, existing paper tracing system)
- High cost \$0.76/cwt (bar code tracing system)
- Maximum willingness to pay estimate

Is it worth maintaining the seed potato market into the US?

- Low cost scenario shows the added T&P cost will decrease Canadian social welfare by \$370,000 (0.2%).
- Cost approximately one-tenth of the \$3.4 million Canada would lose under autarky.
- Reduction in US social welfare is small (a credible U.S. threat?).

Table 2. Estimated Impacts of Increased Tracing and Packaging costs in the Canadian and US Seed Potato Markets (Millions of 1997-2001 Canadian Dollars)

Welfare Changes	Estimated Compliance Cost			
	\$0.04/cwt	\$0.37/cwt	\$0.76/cwt	Ban on US Trade
Canada				
Consumer Surplus	-0.22	-2.07	-4.27	13.10
Producer Surplus	-0.15	-1.33	-2.73	-16.50
Net Social Welfare	-0.37	-3.40	-6.99	-3.40
US				
Net Social Welfare	-0.07	-0.66	-1.34	-9.61

Results of High Cost Scenario

- T&P cost decreases Canadian social welfare by \$7 million (3.7%), approximately twice autarky loss (a credible threat?).
- Estimated impacts of the high cost scenario do not justify compliance.

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Maximum Willingness to Pay

- Estimated at \$0.37/cwt
- Assumes compensation of domestic winners to domestic losers

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US Losses Under Various Scenarios

- Autarky loss of 9.6 million always outweighs losses in other Scenarios
- Noncompliance by Canada will result in the largest loss to the US
- Is it a credible threat?

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Within Canada distributional effects with Autarky

- T&P welfare losses are approximately the same order of magnitude across Canadian regions.
- Autarky distributional effects:
 - Welfare gains in Central Canada (Ontario and Quebec),
 - Welfare losses in Western Canada (Alberta), and to a lesser extent Atlantic Canada (New Brunswick)

Table 3. Estimated Welfare Impacts of Increased Tracing and Packaging Costs (Millions of 1997-2001 Canadian Dollars)

Welfare Change	Traceability and Packaging Cost			
	\$0.04/cwt	\$0.37/cwt	\$0.76/cwt	No U.S. Trade
Atlantic Canada				
Consumer Surplus	-0.09	-0.87	-1.81	3.04
Producer Surplus	-0.07	-0.58	-1.19	-4.43
Social Welfare	-0.16	-1.46	-2.99	-1.38
Central Canada				
Consumer Surplus	-0.05	-0.51	-1.05	1.77
Producer Surplus	-0.02	-0.14	-0.3	-1.12
Social Welfare	-0.07	-0.65	-1.35	0.65
Western Canada				
Consumer Surplus	-0.08	-0.69	-1.41	8.29
Producer Surplus	-0.06	-0.6	-1.25	-10.96
Social Welfare	-0.14	-1.29	-2.66	-2.66

Conclusions

- Low cost tracing will cause minor disruptions in trade
- High cost tracing implies large Canadian and US losses (is the market worth keeping?)
- Evidence of voluntary tracing systems have been established

Questions?