

Border Delays a Re-Emerging Priority: Numerical Calculations from a Canadian Regional Model

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Background and Motivation

- **Canada–US bilateral trade**
 - US: $\frac{3}{4}$ of Canada exports; $\frac{1}{2}$ of Canada imports
 - about a billion dollars per minute
- **Why should we care?**
 - immediate post 9/11 period was a nightmare for shippers
 - re-emergence of border delays due to administrative delays (all crossings) and/or bottlenecks due to infrastructure (Detroit/Windsor)

- **our focus**
 - border delays of **merchandise trade**
 - skill dimension
 - regional computable general equilibrium model
 - **CREAP** data, **BMRT** model
- **our points**
 - magnitude of welfare costs relative to initial shocks are surprising (too surprising?)
 - delays have amplified impact on structure of wages by skill

Selected Literature

- **agency/advocacy studies**
 - Ontario Chamber of Commerce
 - Canada Border Services Agency
 - Canada-US-Ontario-Michigan (DRIC)
- **Huang & Whalley (2006)**
 - added dimension (larger inventory to avoid out-of-stock)
 - Baumol-Tobin theory of demand for money
 - inventory cost could be as big as waiting cost
 - addition of inventories doubles border delay costs


- *Martin et al (2005)*
 - Québec provincial input-output model
 - 32 minutes/shipment (added costs to truckers)
 - C\$290 million for Canadian exporters
- *Walkenhorst & Dihel (2006)*
 - simulation with GTAP global trade model
 - added security costs: 1–3% of value of goods
 - worldwide welfare costs of heightened security
 - in terms of Hicksian equivalent variations
 - US\$75 billion (0.7% GNP) for 1% cost

Data & Model

- **CREAP Data**
 - details online at <http://creap.wlu.ca>
 - source: StatCan 2001 provincial IO data (S-level)
 - Aggregation:
 - 23 commodities, 12 sectors, 3 skill levels
 - 5 regions (QC, ON, BC, AC, PP)
- **BMRT Model**
 - static, perfectly competitive, nested functions,
 - constant returns to scale, small open economy

Experiments

- ① Merchandise Trade¹ subject to 2% delay cost in all regions of Canada
- ② Merchandise Trade subject to 2% delay cost in each region of Canada individually
- 'Delay cost' is composed of real resources (TRS) used up by delay.
- These experiments correspond loosely to:
 - Walkenhorst & Dihel
 - Huang & Whalley

¹Merchandise trade excludes electricity, natural gas, services. 

Data Issues

- *across-the-board cost increases*
 - would prefer to differentiate cost increases by provinces, goods, exports and imports
- *transport mode*
 - which transport mode for which trade flows?
- our model can accommodate different rates for each commodity and destination (*if data are available*)

Preliminary Results

	Canada			
	Welfare (\$M)	Welfare (%)	GDP (\$M)	GDP (%)
Canada	-13422.8	-1.7	-15177.6	-1.5
	Atlantic Canada			
Atlantic Canada	-691.8	-1.3	-629.8	-0.9
	Québec			
Québec	-2681.1	-1.6	-2471.6	-1.1
	Ontario			
Ontario	-6882.3	-2.1	-6762.8	-1.7
	Prairies			
Prairies	-2338.5	-1.5	-2254.1	-1.2
	British Columbia			
British Columbia	-1171.8	-1.1	-1004.5	-0.7

Real Wages Overview (%)

All Canada Faces Border Delays			
	LOW	MED	HIGH
Atlantic Canada	1.9	-5.0	-5.6
Québec	4.7	-5.1	-3.9
Ontario	3.8	-6.2	-3.9
Prairies	4.7	-4.6	-3.2
British Columbia	2.9	-2.9	-1.8
Provinces Individually Face Delays			
	LOW	MED	HIGH
Atlantic Canada	1.4	-4.8	-1.7
Québec	4.0	-5.1	-2.3
Ontario	3.2	-6.2	-3.0
Prairies	4.6	-4.6	-1.9
British Columbia	1.7	-3.6	-0.8

Discussion

- Welfare and GDP losses are very large **relative** to the direct costs implied.
- **Why?**
 - delays cause resources to be wasted
 - border crossing intensity of some sectors
- Effect on skill structure of wages is also large. †
- **Why?**
 - 73% of earnings in transportation and storage sector goes to low-skilled workers.
 - 2% is a modest share of cost, but amounts to a **huge** increase in demand for transportation.