

Industry Canada

Roundtable on Global Supply Chains

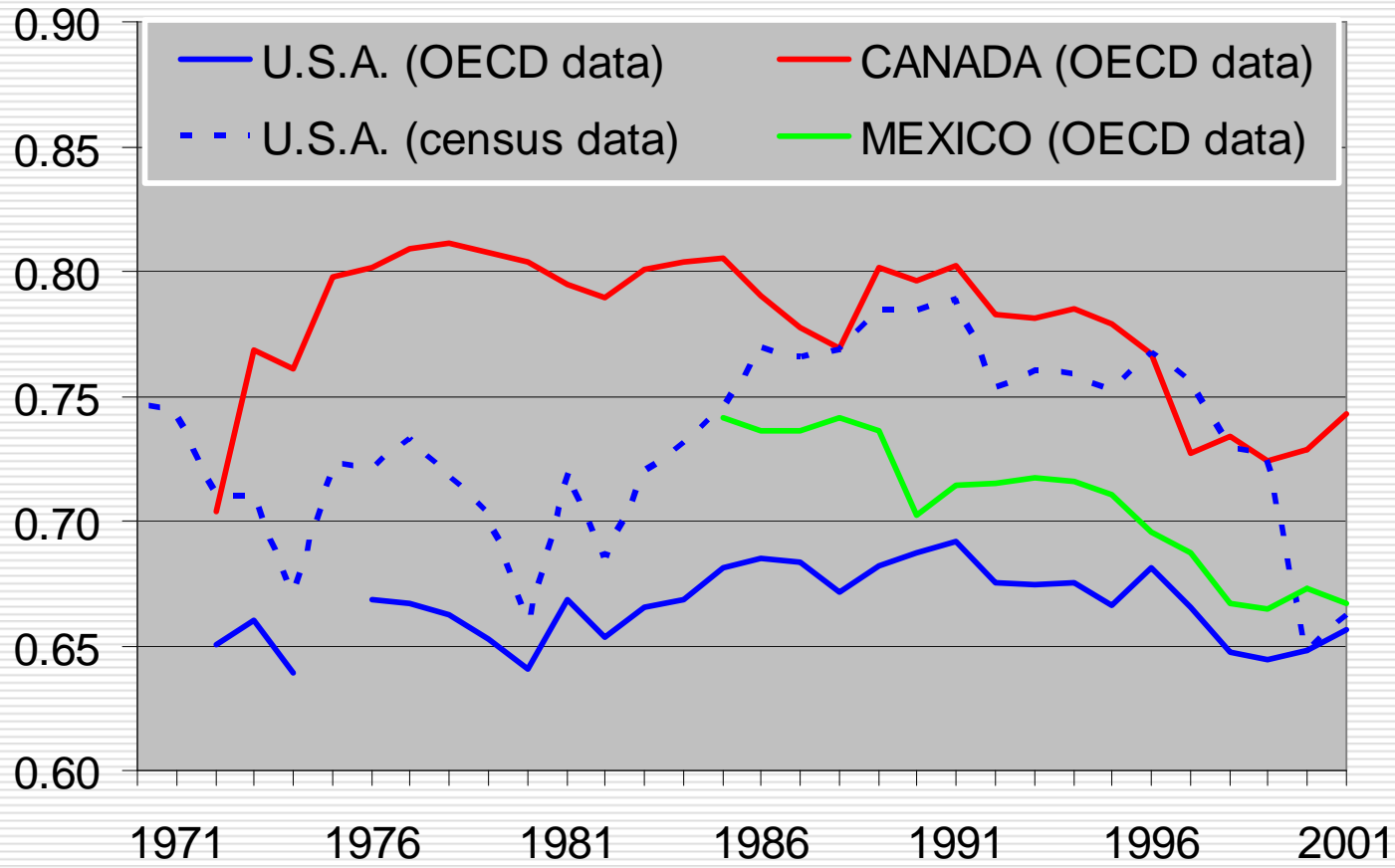
“Outsourcing and Offshoring of Automotive Components”

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University of Toronto

Outsourcing trends in the data

1. The fraction of “intermediate inputs” in sales did **not** increase over time
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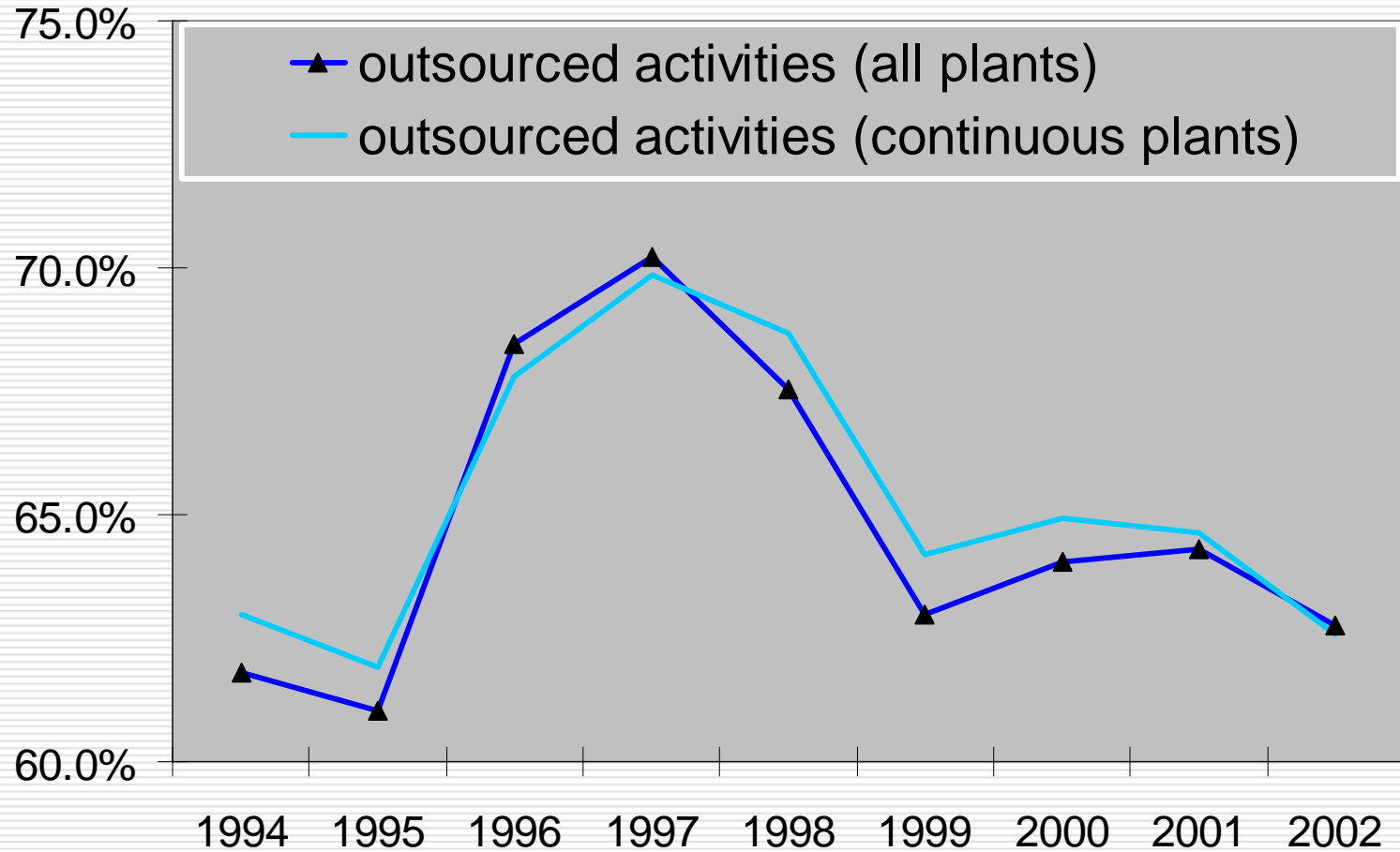
1. Fraction of intermediate inputs in sales



Outsourcing trends in the data

1. The fraction of “intermediate inputs” in sales did **not** increase over time
 2. The fraction of “activities” that plants outsource did **not** increase over time
-

2. Fraction of outsourced activities



Outsourcing trends in the data

1. The fraction of “intermediate inputs” in sales did **not** increase over time
 2. The fraction of “activities” that plants outsource did **not** increase over time
 3. Automotive component sales **are** gaining on finished vehicle sales
-

Component sales are gaining (U.S.)

SIC 3711: Motor vehicle & car bodies			
	1989	1995	2001
Total sales (+3.0% / year)	\$149.3	\$201.3	\$214.1
Total imports	\$54.5	\$76.5	\$124.4
as % of 3711 sales	36.5%	38.0%	58.1%
SIC 3714: Motor vehicle parts & accessories			
Total sales (+9.1% / year)	\$65.7	\$108.7	\$186.2
Total imports	\$20.7	\$28.6	\$37.8
as % of 3714 sales	31.5%	26.3%	20.3%
as % of 371 material cost	13.9%	12.9%	13.1%

Outsourcing trends in the data

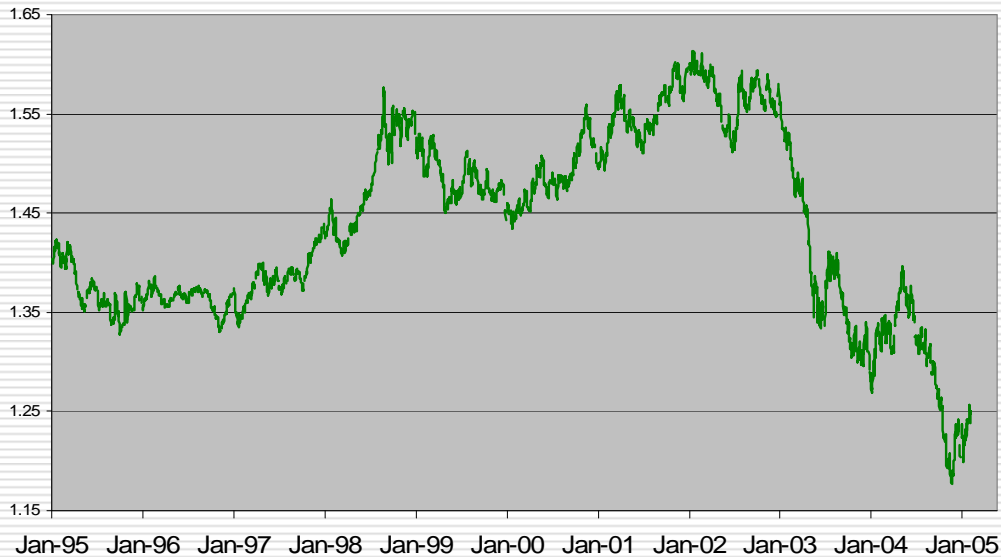
1. The fraction of “intermediate inputs” in sales did **not** increase over time
 2. The fraction of “activities” that plants outsource did **not** increase over time
 3. Automotive component sales **are** gaining on finished vehicle sales
- Look at **origin** of components
-

Trade background

- Autopact (1965) ended in 2001
 - Fewer finished vehicle exports to U.S.
 - NAFTA in effect in 1996
 - More imports from Mexico
 - Domestic content requirements
 - China enters WTO (Dec. 2001)
 - Benefits from MFN treatment
-

Trade today

USD/CAD exchange rate



- 21% of Canadian export is automotive
 - 85% of it goes to U.S.
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Trade in the future

- \$600 million Border Infrastructure fund
 - 70% of Canada-U.S. truck traffic goes through just six crossing points
 - 70% of automotive ... through three points Windsor, Sarnia, Fort Erie
 - Free Trade Agreement of the Americas
 - U.S. tariff on parts: 0-2.5%
 - Canada tariff on parts: 0-8.5%
 - Mexican tariff on parts: 3-18%
-

Automotive industry in Canada

Employment	1991	2002
Vehicle assembly	53,300	51,000
Parts and Components	65,400 (55%)	98,100 (66%)

1. Assembly plants moved south
 2. North American industry reorganized
 3. Canadian firms export more
-

1. Plants moved

- Investment subsidies
 - Maureen Appel Molot (2005):
“Location Incentives and Inter-State Competition for FDI: Bidding Wars in the Automotive Industry”
 - Michael Greenstone & Enrico Moretti ('04):
“Bidding for Industrial Plants: Does Winning a 'Million Dollar Plant' Increase Welfare?”
 - Ontario Automotive Investment Strategy
(April 2004, \$½b, \$300m minimum)
 - Canadian Skills & Innovation Project
(5 federal departments, \$1b – ½ to match Ontario)
-

2. Industry reorganized

First source of information:

- *Automotive News (& AN Europe)*
 - Vehicle cutaways
 - 108 models
 - Published 2002-05 (ongoing)
 - Example...
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Suppliers to the 2005 Honda Odyssey

The redesigned 2005 Honda Odyssey, which went on sale in the United States in September, has a base 3.5-liter V-6 engine that delivers 255 hp and 250 pounds-feet of torque.

The minivan's length did not change from the previous generation, but Honda added 2 inches to the length of the interior. Third-row legroom is 3 inches greater.

The Odyssey offers cylinder deactivation and Honda's Vehicle Stability Assist, which helps keep

the minivan under control during difficult driving conditions. Side-curtain airbags on all three rows have rollover sensors.

The Odyssey comes in three trim levels: LX, EX and Touring.

If you are a supplier and have questions or want your information considered for our cutaway features, contact Alex Graham at automotivenews@autobusiness.co.uk.



3. Firms export

Second source of information:

- *United Nations Comtrade Database*
 - Bilateral trade flows
 - All countries in the world
 - HS 1992: 1993-2003
-



Search the site

Comtrade Database

Quick Search

Search input field with 'Clr' and 'Go' buttons

My Comtrade

- Account Info
Favorites
Predefined Favorites
Download History
Saved Queries
Customize Frontpage
Customize Download Format
Batch Monitor

Comtrade Access

Log Off

Data Query & Extraction

- Shortcut query
Basic Selection
Comtrade Explorer
Express Selection

Data Availability

- Interactive
in Graph
Reporters
Commodities
Years
by Date of Loading

Metadata & Reference

- Commodity list
Country list
Glossary

Subscription

- Why Subscribing?
Subscription Prices
Order Form (in Word)

Support

- Comtrade Features
Help Index
Question & Answer
Contact Us

Basic Selection help

Step 0. Load Saved Query (optional)

-- No Saved Query found -- Load

Step 1. Select Classification

- SITC Rev.1 SITC Rev.2 SITC Rev.3 HS1992 HS1996 HS2002

Step 2. Enter Selection Items

- Commodities Reporters Partners Years Others

Enter Commodity Codes

Step 1. Select Source

Commodities Search

Step 2. Select Items

Search / Select then Add

brakes in HS1992

Search All commodities

Here are the results: Include the children

- TOTAL - ALL COMMODITIES
38 - Miscellaneous chemical products
68 - Stone, plaster, cement, asbestos, mica, etc articles
85 - Electrical, electronic equipment
86 - Railway, tramway locomotives, rolling stock, equipmen
87 - Vehicles other than railway, tramway
8708 - Parts and accessories for motor vehicles
870831 - Mounted brake linings for motor vehicles
870839 - Brake system parts except linings for motor vehicles
8714 - Parts and accessories of bicycles, motorcycles, etc

Add Remove Remove All Exclude

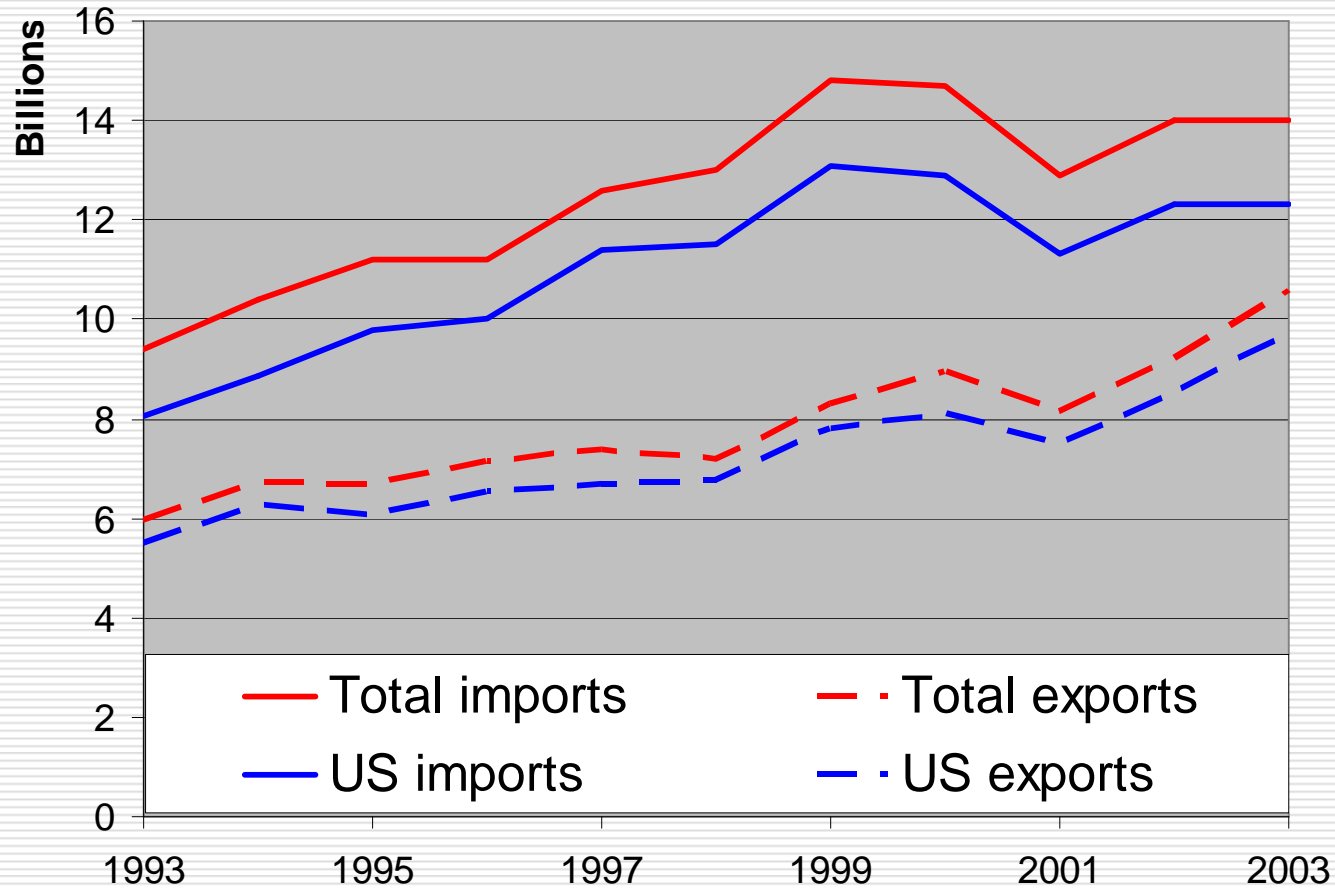
Save selections to favorites

Submit Query Go to Comtrade Explorer

UN Bilateral trade: findings

1. Canadian imports
 2. Canadian exports – growth
 3. Canadian exports – destination
 4. Canadian exports – potential
-

Evolution of component trade (HS8708)



UN Bilateral trade: findings

1. Canadian imports
 - a. U.S. is incredibly important
 - b. Post-NAFTA: increasing importance of U.S.
 - c. Post-NAFTA: decreasing importance of Mexico (!) and Japan
 - d. Concentration of imports is very high and decreasing only slowly
 - e. Emerging markets are still relatively unimportant
-

1. Canadian imports (HS 8708)

	Imports (incl. USA)			Imports (excl. USA)	
	1993	2003		1993	2003
USA	0.857	0.875			
Japan	0.065	0.053	Japan	0.451	0.427
Mexico	0.043	0.032	Mexico	0.300	0.257
EU	0.025	0.021	EU	0.177	0.165
Top 4	0.990	0.981	Top 3	0.928	0.849

1. Canadian imports (HS 8708)

	Imports (incl. USA)			Imports (excl. USA)	
	1993	2003		1993	2003
Top 4	0.990	0.981	Top 3	0.928	0.849
China	0.000	0.007	China	0.002	0.054
S. Korea	0.005	0.004	S. Korea	0.033	0.030
Brazil	0.002	0.003	Brazil	0.016	0.023
Australia	0.002	0.001	Australia	0.014	0.006
Top 8	0.999	0.996	Top 7	0.993	0.962

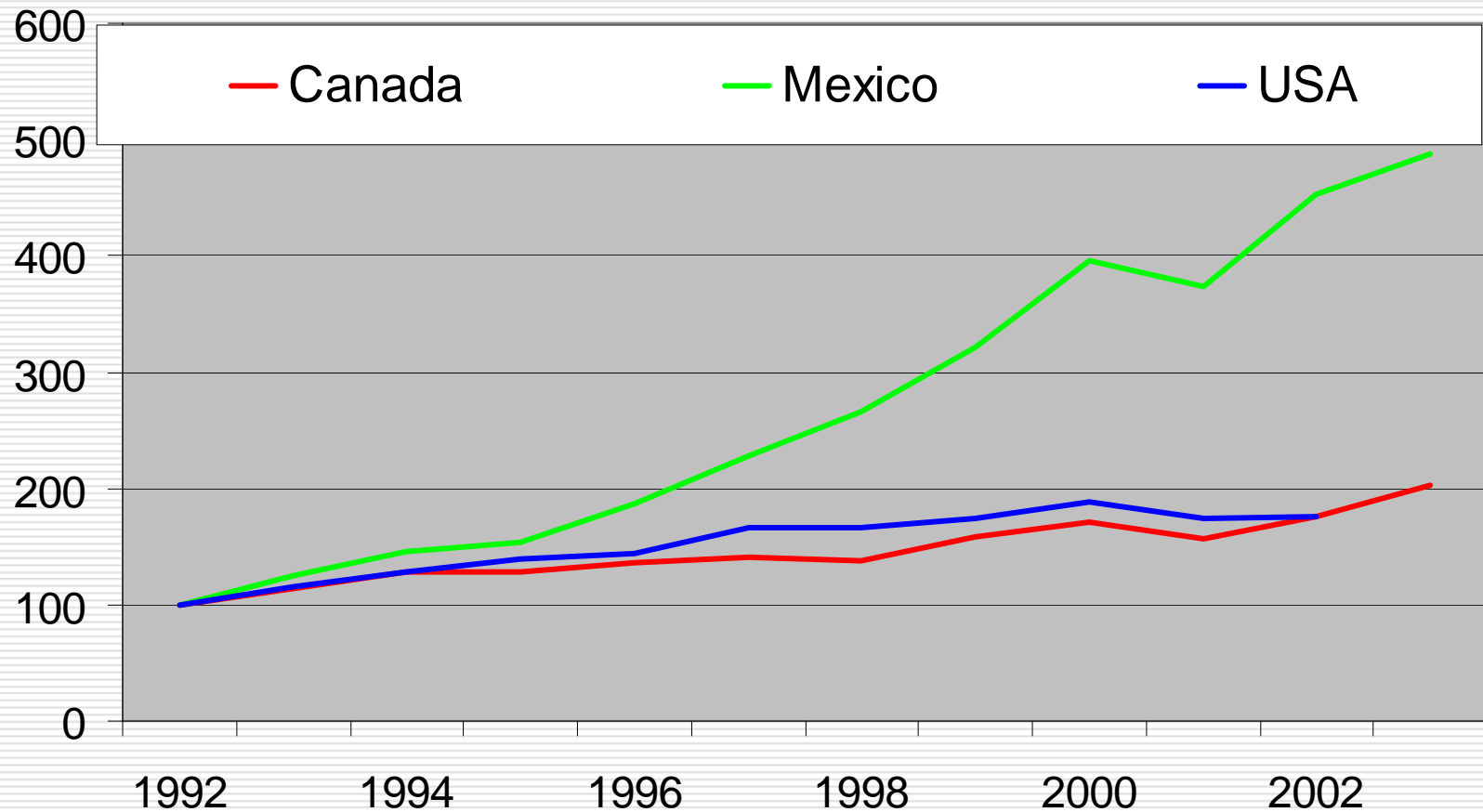
1. Canadian imports (HS 8708)

	Imports (incl. USA)			Imports (excl. USA)	
	1993	2003		1993	2003
Top 8	0.999	0.996	Top 7	0.993	0.962
CEE	0	0.001	CEE	0.001	0.012
India	0	0.001	India	0.001	0.007
Thailand	0	0.001	Thailand	0.001	0.006
Asia	0	0.001	Asia	0.001	0.005
Latin Am.	0	0	Latin Am.	0	0.003
Others	0	0	Others	0.001	0.004

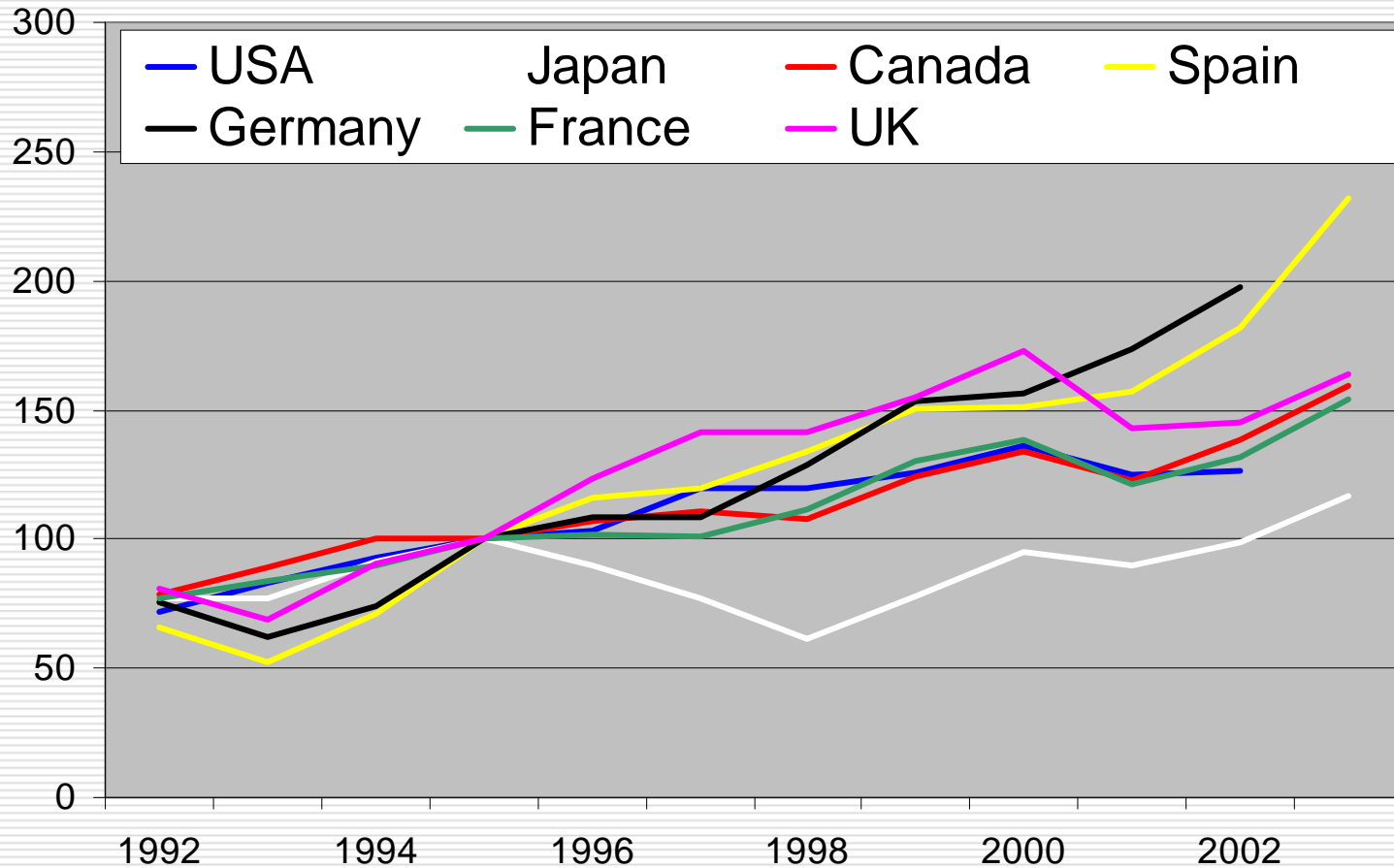
UN Bilateral trade: findings

1. Canadian imports
 2. Canadian exports – growth
 - a. Growth holds pace with U.S.,
 - b. but not with Mexico,
 - c. or Germany, U.K., and Spain,
 - d. and certainly not with China, Thailand, and India
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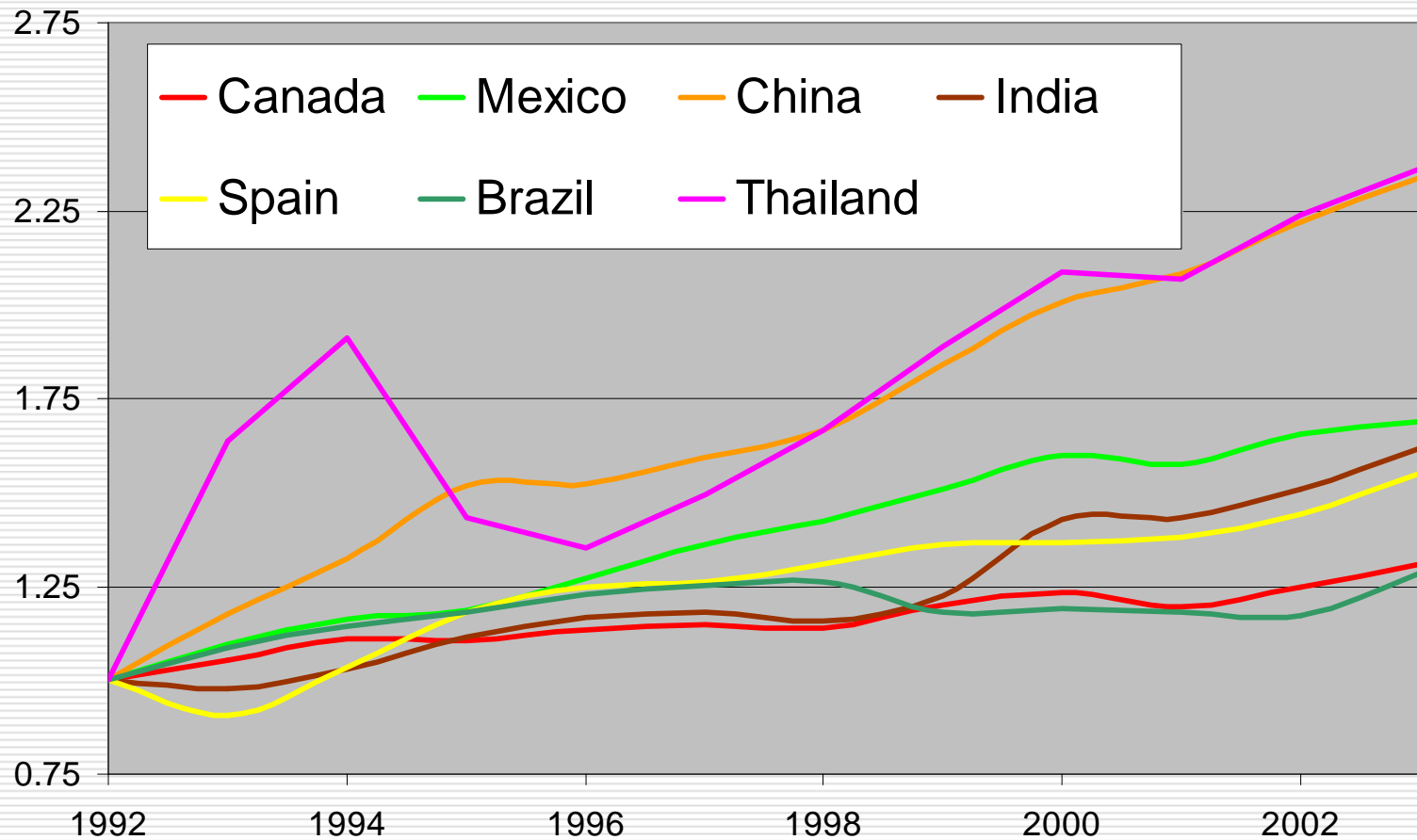
2. Canadian export growth (HS 8708)



2. Canadian export growth (HS 8708)



2. Canadian export growth (log scale)



UN Bilateral trade: findings

1. Canadian imports
 2. Canadian exports – growth
 3. Canadian exports – destination
 - a. U.S. is even more important than for imports
 - b. China absorbs $\frac{1}{2}$ of all non-U.S. exports
 - c. Concentration on top destinations is clearly increasing over time
-

3. Canadian export destinations

	Exports (incl. USA)			Exports (excl. USA)	
	1993	2003		1993	2003
USA	0.925	0.916			
China	0.015	0.047	China	0.196	0.562
Mexico	0.016	0.018	Mexico	0.208	0.213
Top 3	0.956	0.981	Top 2	0.404	0.775

3. Canadian export destinations

	Exports (incl. USA)			Exports (excl. USA)	
	1993	2003		1993	2003
Top 3	0.956	0.981	Top 2	0.404	0.775
EU	0.009	0.008	EU	0.119	0.092
Japan	0.006	0.003	Japan	0.085	0.039
Latin Am.	0.004	0.002	Latin Am.	0.058	0.025
Australia	0.015	0.002	Australia	0.196	0.019
Top 7	0.990	0.996	Top 6	0.860	0.950

4. Canadian export potential

Top 10 parts (excl. n.e.c.)	Share	Importance of USA		Export growth	
		Share	import growth (av. +32%)	Mexico (av. +53%)	China (av. +307%)
Brake system	0.252	0.96	+32%	+42%	+207%
Bumpers	0.165	0.96	+18%	+158%	+121%
Fittings	0.136	1.00		+74%	-71%
Wheels	0.126	0.91	+79%	+157%	+554%
Mufflers	0.069	0.99	+79%	+281%	+1835%
Safety glass	0.048	0.87	+23%	-6%	+225%
Electric lighting	0.046	1.00		+199%	+264%
Shock absorbers	0.036	0.89	+20%	+1090%	+3066%
Safety belts	0.033	0.73	-44%	+14%	+4848%
seats	0.023	0.99	-99.7%	+301%	+2401%




AN Model cutaways: findings

1. Supplier sharing
 2. Extent of supplier involvement
 3. Component sharing

 4. Within vs. across...
 - a. Platforms
 - b. Plants
 - c. Firms
-

1. Supplier sharing

□ Sourcing for GM's epsilon platform

	Chevrolet Malibu	Opel Vectra	Saab 9-3
			
Assembly plant	Fairfax, KS, USA	Russelsheim, Ger.	Trollhattan, Sweden
Components obs.	29	65	37
Different firms	27	42	35
Shared with Opel	11	-	11
Shared with Saab	8	11	-
Fraction shared:	32%	26%	29%

2. Extent of supplier involvement

- It is really a collective effort




Total firms observed	78
Top 50 worldwide	28
Top 100 worldwide	37 (47%)
Top 30 Europe	24

3. Component sharing



- Second sourcing is common

Identical components	on two models		on three models
Number	20	Number	2
Same firm	6	All three models differ	1
Different firm	14	Two models share supplier	1
		All models the same	0



1-2-3. Ford (robustness check)

		Ford Focus	Ford Focus C-Max	Volvo S40
				
1. Supplier sharing	38%	35% - 33%	35% - 46%	33% - 46%
2. Suppliers involved	32 40%	Top 50 world: 25	Top 100 world: 32	Top 30 EU: 16
3. Component sharing	89%	5/5 – 6/7 93%	5/5 – 9/11 91%	6/7 – 9/11 84%

4a. Within vs. across **platforms**

		Supplier sharing	Top 100 global	Component sharing
	Epsilon	29%	37 47%	25%
	Focus	38%	32 40%	89%
Chrysler Crossfire Mercedes SLK	Same platform Diff. generation	50%	30 48%	78%
Chrysler 300 Mercedes E-class	Diff. platform similar segment	19%	37 49%	25%

4b. Within vs. across **plants**

		Supplier sharing	Top 100 global	Component sharing
	Epsilon	29%	37 47%	25%
	Focus	38%	32 40%	89%
Honda Pilot Honda Odyssey	Same plant	32%	30 59%	40%
Chrysler 300 Chrysler Pacifica	Nearby plants	31%	29 49%	31%

4c. Within vs. across **firms**

		Supplier sharing	Top 100 global	Component sharing
	Epsilon	29%	37 47%	25%
	Focus	38%	32 40%	89%
Toyota Sienna Honda Odyssey Nissan Quest	minivans	28%	29 58%	33%
Chevy Colorado Dodge Dakota Toyota Tacoma	Compact pickups	26%	37 51%	48%