

North American Product Space: Implications for US-Mexico- Canada Economic Growth and Development

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Key Ideas

- Production reveals something
- You are what you produce
- Your future derives from what you produce
- Complexity is important for future opportunities

Theoretical Framework

- Orthodoxy – Comparative Advantage
- Hechscher – Olin extension
- Hausmann and Hidalgo (2011)
- Revealed Comparative Advantage

Data and Its Interpretation

- NAFTA area exports by country and in total
- NAICS
- 3-digit level
- Revisions in 2002 and 2007
- Years 2000 – 2012
- Year 2017

Sample NAICS Codes

Table 1 – Three-Digit Codes Attribute and Industry

3-Digit NAICS Code	Industry
111	Agricultural Products
112	Livestock and Livestock Products
113	Forestry Products
114	Fish, Fresh, Chilled, or Frozen and Other Marine Products
211	Oil And Gas
212	Minerals and Ores
311	Food and Kindred Products
312	Beverages and Tobacco Products
313	Textiles and Fabrics
314	Textile Mill Products
315	Apparel and Accessories
316	Leather and Allied Products
321	Wood Products
322	Paper
323	Printed Matter and Related Products, Nesoi
324	Petroleum and Coal Products
325	Chemicals
326	Plastics and Rubber Products
327	Nonmetallic Mineral Products
331	Primary Metal Manufacturing

COMTRADE DATA

Commodity
1 Animals; live
2 Meat and edible meat offal
3 Fish and crustaceans, molluscs and other aquatic invertebrates
4 Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included
5 Animal originated products; not elsewhere specified or included
6 Trees and other plants, live; bulbs, roots and the like; cut flowers and ornamental foliage
7 Vegetables and certain roots and tubers; edible
8 Fruit and nuts, edible; peel of citrus fruit or melons
9 Coffee, tea, mate and spices
10 Cereals
11 Products of the milling industry; malt, starches, inulin, wheat gluten
12 Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit, industrial or medicinal plants; straw and fodder
13 Lac; gums, resins and other vegetable saps and extracts
14 Vegetable plaiting materials; vegetable products not elsewhere specified or included
15 Animal or vegetable fats and oils and their cleavage products; prepared animal fats; animal or vegetable waxes
16 Meat, fish or crustaceans, molluscs or other aquatic invertebrates; preparations thereof
17 Sugars and sugar confectionery
18 Cocoa and cocoa preparations

Calculating RCA

$$\frac{\frac{\sum \text{3-Digit NAICS}_{\text{Export-Country}}}{\sum \text{All 3-Digit NAICSC}_{\text{All Exports-Country}}}{\frac{\sum \text{3-Digit NAICS}_{\text{Export Regional}}}{\sum \text{All 3-Digit NAICSC}_{\text{All Exports Regional}}}} = \text{RCA}_{\text{Country NAFTA}}$$

All values in U.S. Current Dollars

RCA for 2000 and 2017

Table 2 . Revealed Comparative Advantage Ratio 2000

NAICS	U.S.	CA	MX
111	15.52	0.06	1.00
112	194.66	0.01	1.00
113	18.92	0.05	1.00
114	37.48	0.03	1.00
115	1.78	0.56	1.00
211	1.59	0.63	1.00
212	5.57	0.18	1.00
213	0.00	0.00	0.00
221	0.00	0.00	0.00
311	33.32	0.03	1.00
312	0.20	5.01	1.00
313	2.20	0.45	1.00
314	0.29	3.44	1.00
315	0.29	3.39	1.00
316	1.84	0.54	1.00
321	87.77	0.01	1.00
322	38.11	0.03	1.00

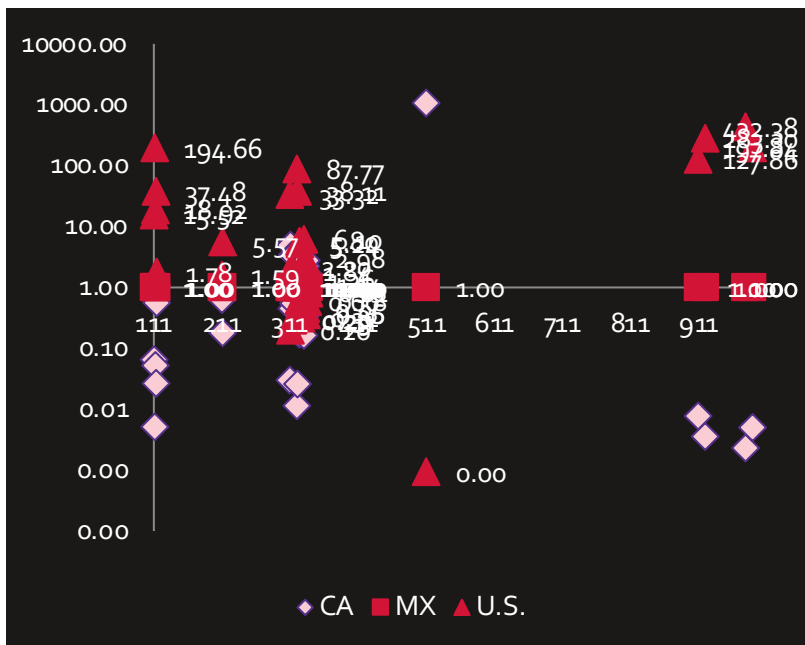
Revealed Comparative Advantage 2017

	Commodity	MX	CA	US
1	Animals; live	1.003895 59	1.9016161 39	
2	Meat and edible meat offal		1.1099735 37	1.28012 196
3	Fish and crustaceans,		2.3212763 03	
4	Dairy produce; birds' eggs; natural honey;			1.97266 4174
5	Animal originated products;			1.28720 7049
6	Trees and other plants, live; bulbs,		1.7607386 5	
7	Vegetables and certain roots and tubers;	2.145542 532		
8	Fruit and nuts,	2.461870 22		

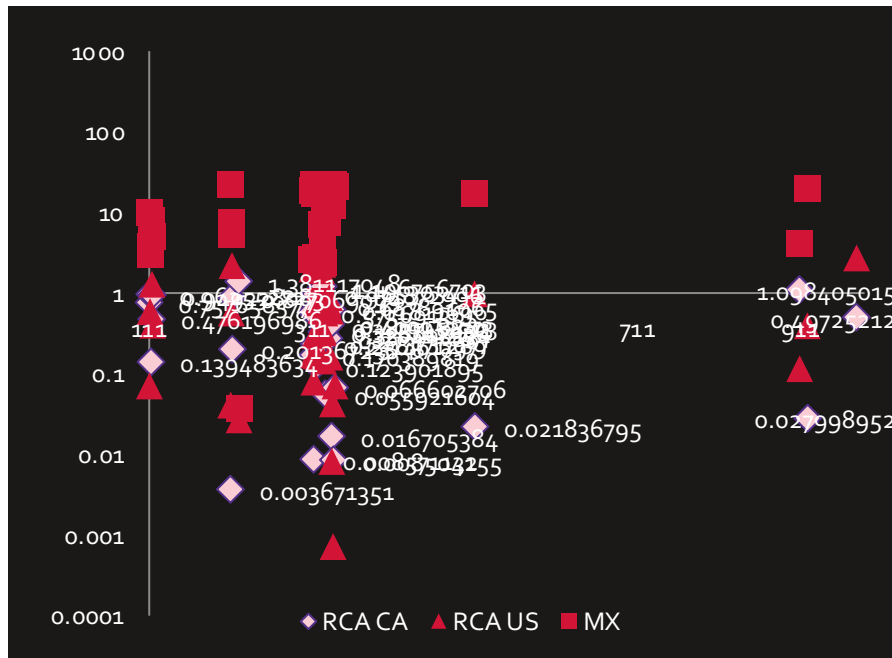
Results

- Four screen shots
- Graphs show points at which $RCA \geq 1$
- Yearly comparisons
 - 2000
 - 2005
 - 2012
 - 2017

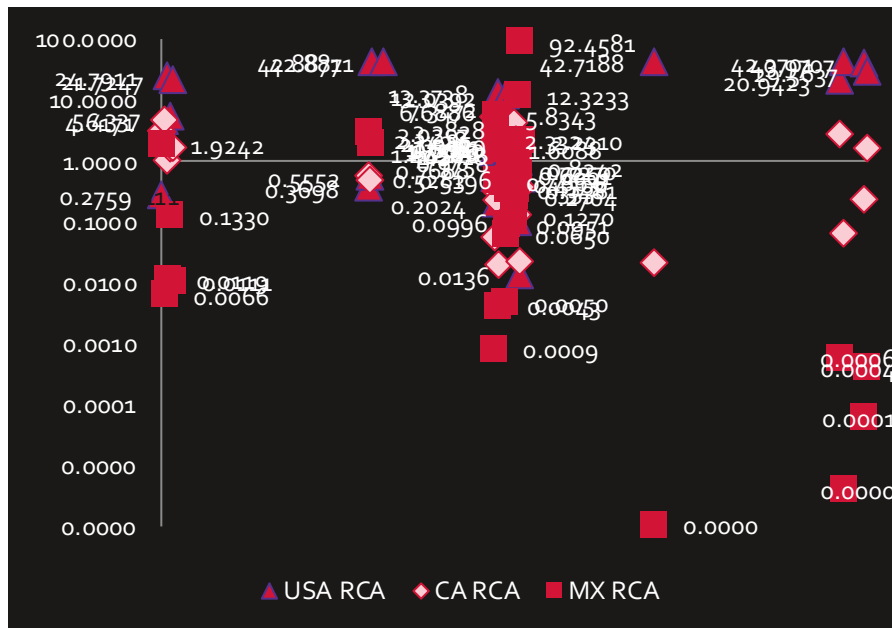
2000



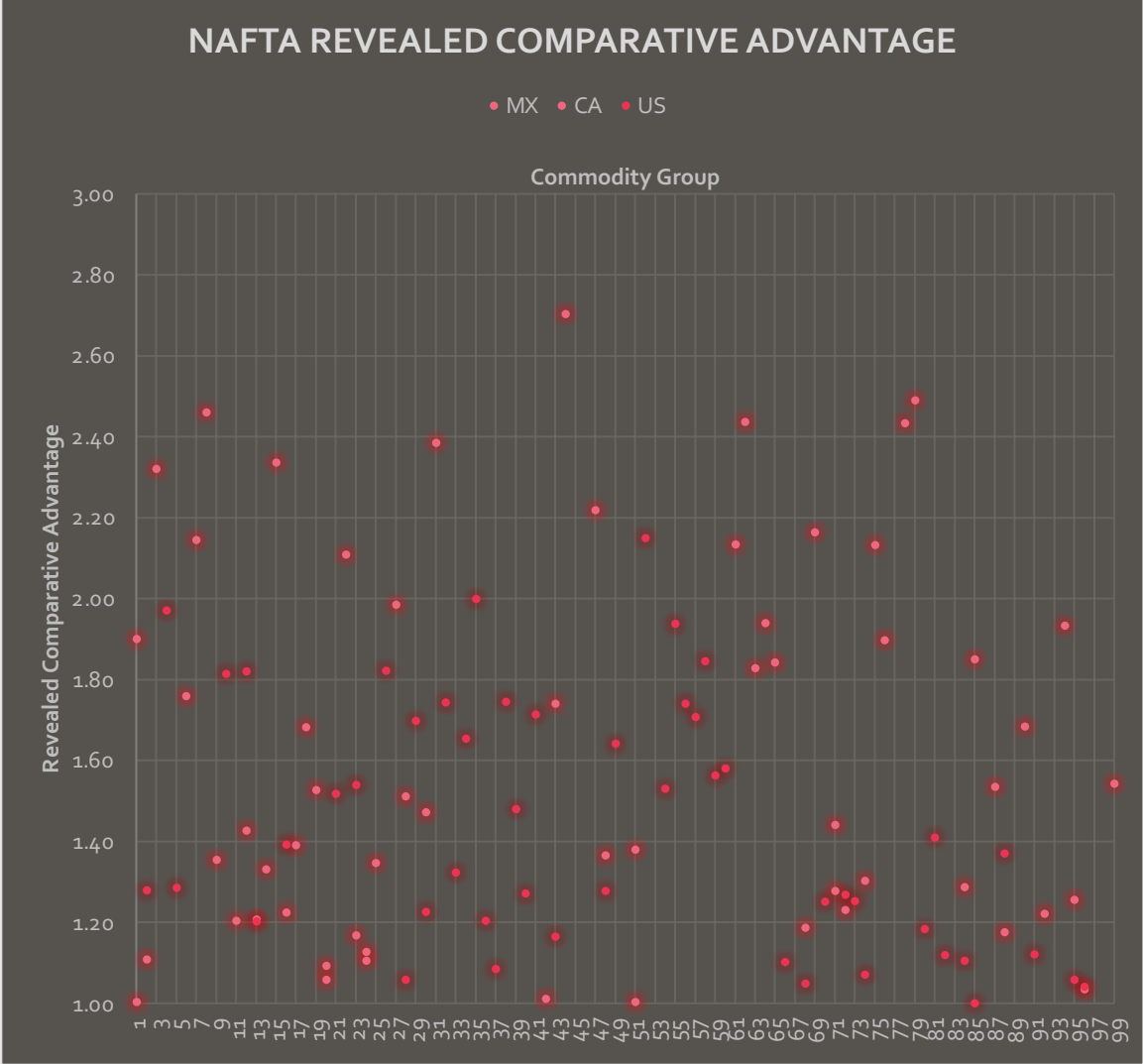
2005



2012



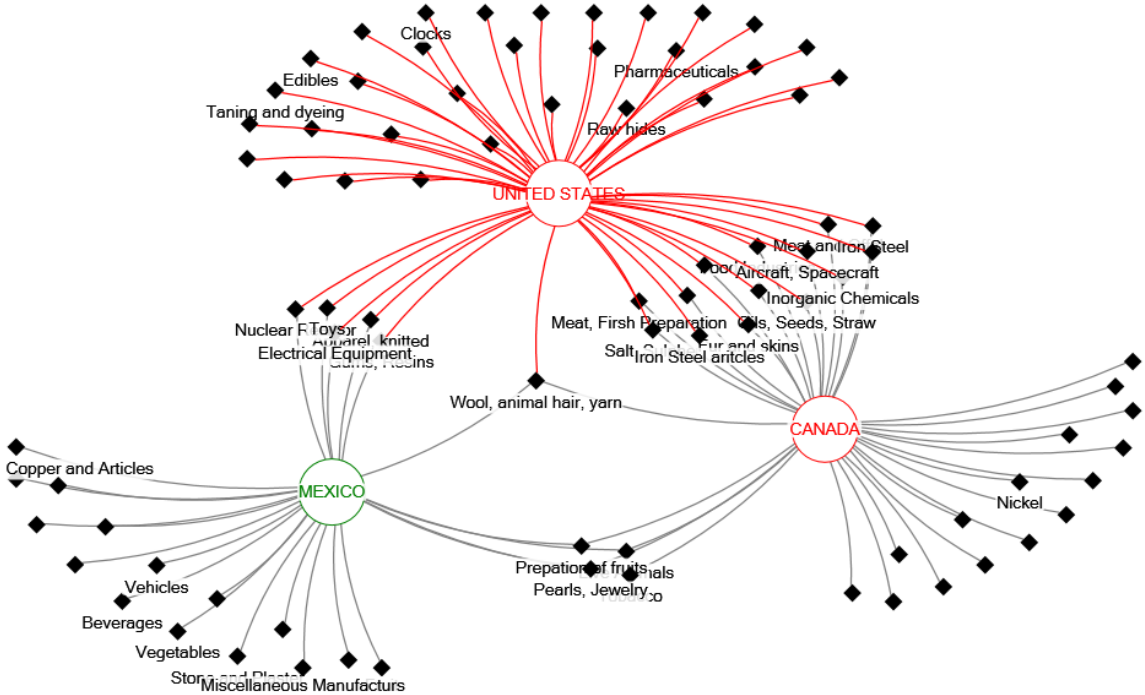
RCA 2017



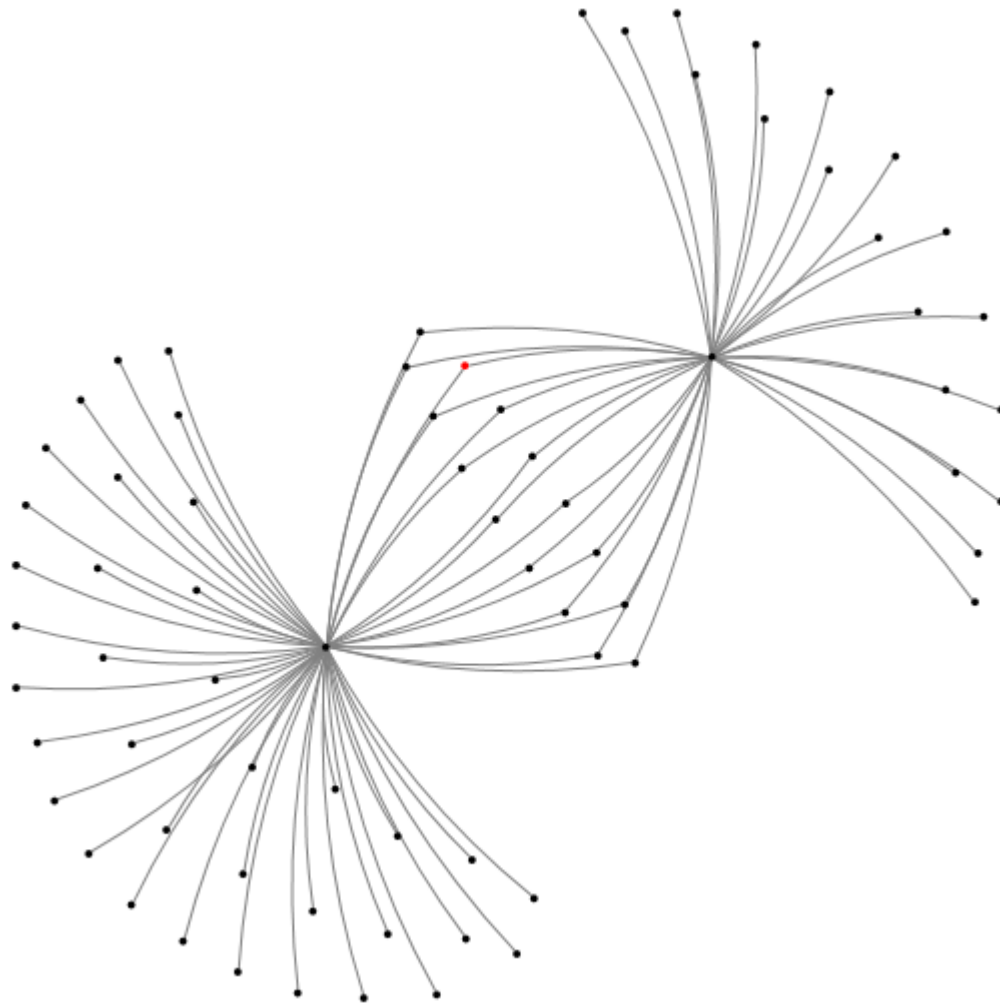
Comments on Product Space

- Grouping of RCA suggest something about USMXCA area production
- Also RCA changing for countries
- More complex tasks require higher skills
 - Skills transitivity
- Agricultural Product vs. Manufacturing Production
 - Implications for employment and wages
 - Implications for each country and region

Network Perspective of Data



Subgraph - Aircraft and Space



Next Steps in Research

- Complete the RCAs for each year 2000 -2018
- Reconcile inconsistencies or missing values in some categories
- Add in FDI by COMTRADE
- Add in, if possible, immigration or changes in domestic employment structures.
- Consolidate and map using networks

References

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5. Statistics Canada (<http://www.statcan.gc.ca/start-debut-eng.html>)
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