

How Important is the New Goods Margin in International Trade?

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How Does Trade Grow?

- Intensive Margin: growth in goods already traded
- Extensive Margin: trade in goods not traded before

What Happens to the Extensive Margin?

- During trade liberalization?
 - ▶ Large changes in the extensive margin

- During growth episodes?
 - ▶ Large changes in the extensive margin

- Over the business cycle?
 - ▶ Little change in the extensive margin

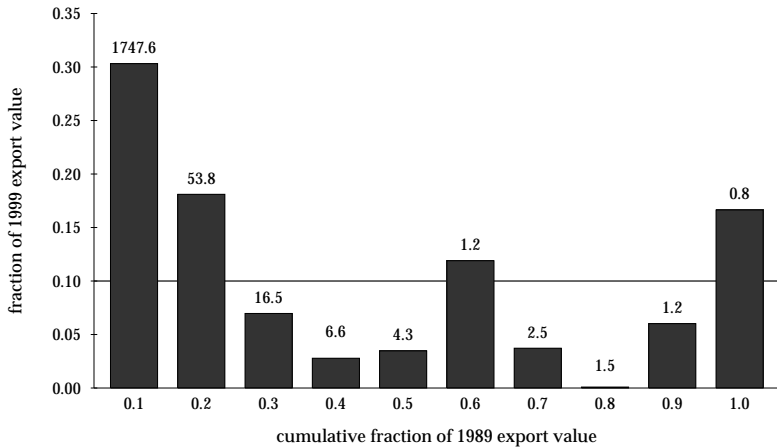
Data & Countries

- 5-digit SITC bilateral trade flows
 - ▶ Also 6-digit HS data
- Trade liberalization
 - ▶ CAUSFTA & NAFTA (also EU accessions)
- Structural change
 - ▶ Chile, China, South Korea
- Business cycles and no structural change
 - ▶ Top U.S. trading partners: Germany, U.K., Japan

Measure 1

1. Rank codes from lowest value of exports to highest value of exports based on average of first 3 years
2. Form sets of codes by cumulating exports: the first 1747.6 codes make up 10 percent of exports; the next 53.8 codes make up 10 percent of exports; and so on.
3. Calculate each set's share of export value at the end of the sample period.

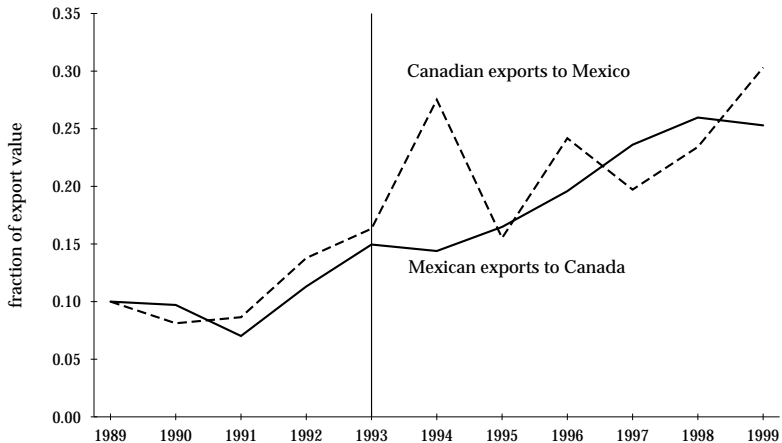
Composition of Exports: Mexico to Canada



Measure Two

1. Order codes as before.
2. Cumulate exports as before.
3. Follow the evolution of the first (least-traded) set's share

Timing of Extensive Margin Growth



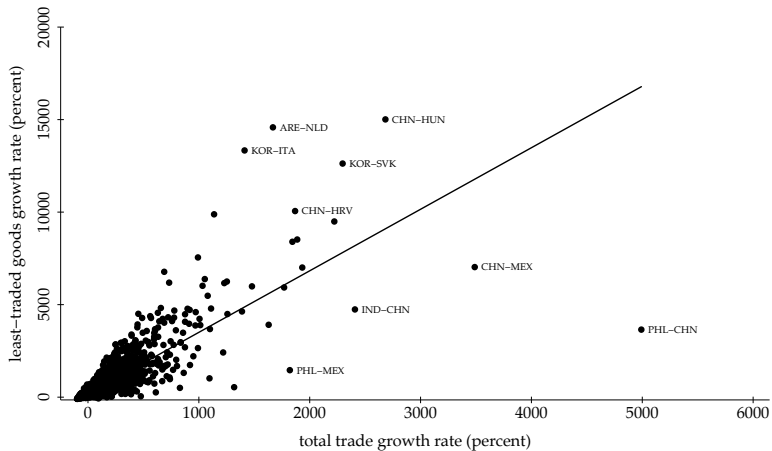
Trade Growth and the Extensive Margin

- Before turning to specific events, what happens to the extensive margin when trade grows ... for any reason?
- Total trade from m to n , x^{mn}
- Least-traded goods from m to n , \hat{x}^{mn}
- Regress growth rates over different horizons, k

$$\Delta_{1995,1995+k}(\hat{x}^{mn}) = \alpha_k \Delta_{1995,1995+k} x^{mn} + \epsilon_{mn}$$

- Not meant to be causal!

Least-traded Goods Growth and Total Trade Growth



Least-traded Goods Growth and Total Trade Growth

Horizon (years)	SITC2 Coefficient	R-squared	HS 92 Coefficient	R-squared
1	0.299** (0.119)	0.215	0.498*** (0.053)	0.413
2	0.493*** (0.044)	0.403	0.704*** (0.041)	0.595
3	2.016*** (0.192)	0.430	1.885*** (0.151)	0.525
4	2.246*** (0.129)	0.468	2.439*** (0.123)	0.497
5	2.836*** (0.232)	0.503	2.735*** (0.220)	0.566
6	2.425*** (0.381)	0.517	2.829*** (0.245)	0.564
7	3.108*** (0.234)	0.663	3.205*** (0.323)	0.686
8	3.752*** (0.385)	0.682	4.241*** (0.426)	0.791
9	3.599*** (0.330)	0.725	3.647*** (0.387)	0.757
10	3.591*** (0.402)	0.717	4.288*** (0.243)	0.837
Obs	1,913		1,277	

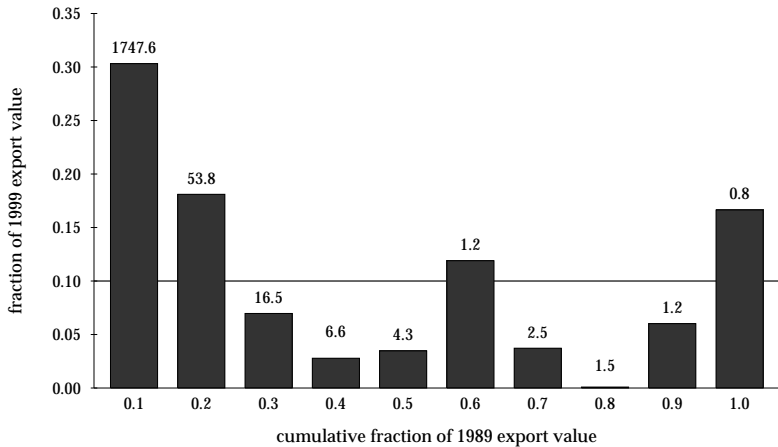
Trade Growth and the Extensive Margin

- 10% increase in total trade accompanied by 36% increase in extensive margin
- Extensive margin growth is stronger over longer horizons
 - ▶ Picking up long term changes in export profitability?
 - ▶ Consistent with sunk cost models (Ruhl 2008)
 - ▶ More on this below: business cycles vs. structural change

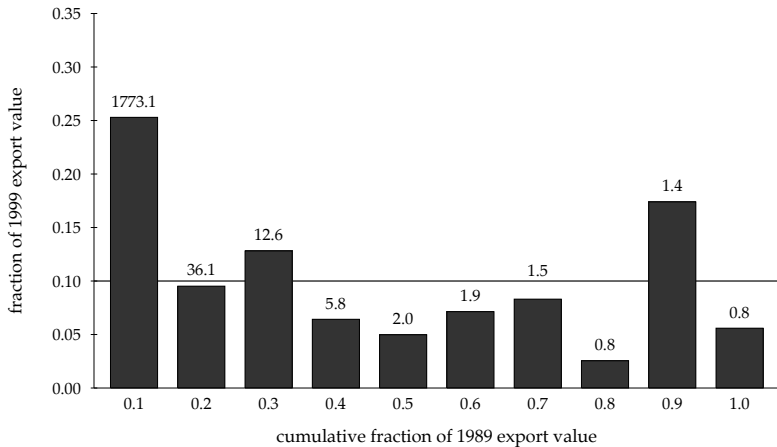
The Extensive Margin and Big Changes

- How does the extensive margin change after trade liberalization?
 - ▶ NAFTA
- How does the extensive margin change during “structural transformations”?
 - ▶ Structural transformation: development episodes
 - ▶ Chile, China, South Korea

Composition of Exports: Mexico to Canada



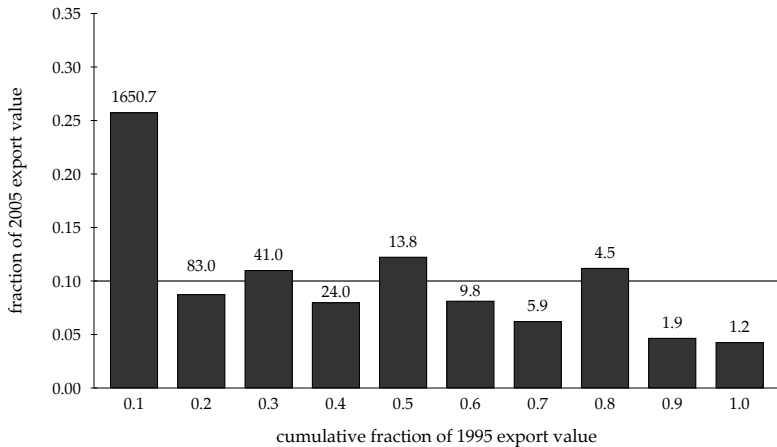
Composition of Exports: Canada to Mexico



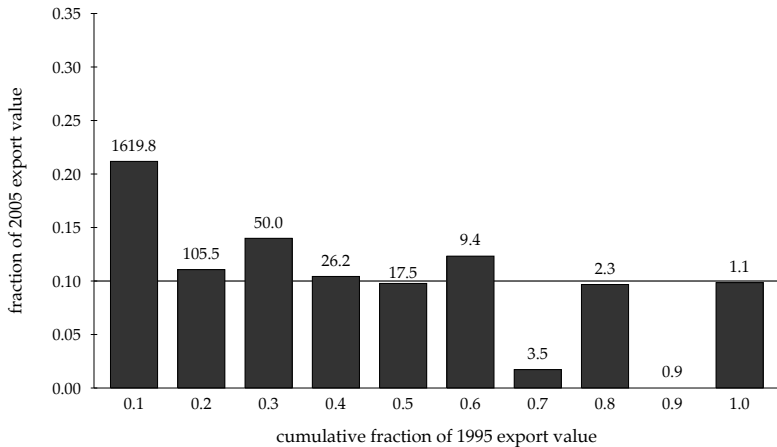
Share of Least-traded Goods: Trade liberalization

Period	Trade flow	Share of total exports
1989-1999	Canada to Mexico	0.303
1989-1999	Mexico to Canada	0.253
1988-1998	Canada to United States	0.166
1988-1998	United States to Canada	0.121
1989-1999	Mexico to United States	0.180
1980-1988	Mexico to United States	0.357
1989-1999	United States to Mexico	0.137
1980-1988	United States to Mexico	0.223

Composition of Exports: China to United States



Composition of Exports: United States to China



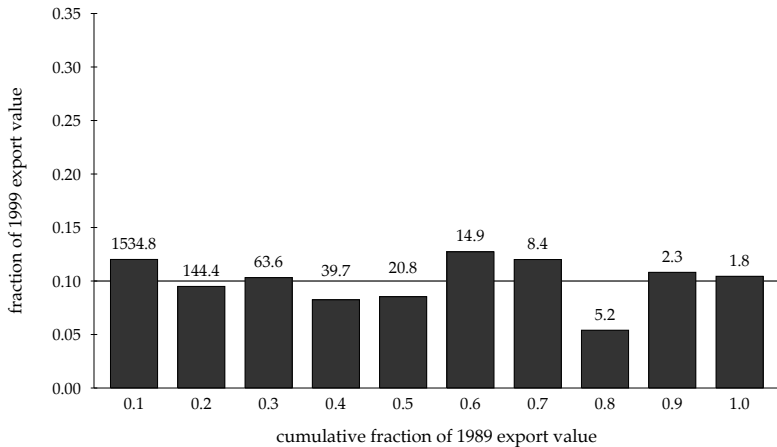
Share of Least-traded Goods: Structural transformation

Period	Trade flow	Share of total exports
1975-1985	Chile to United States	0.346
1975-1985	United States to Chile	0.707
1995-2005	China to United States	0.257
1995-2005	United States to China	0.212
1975-1985	Korea to United States	0.658
1975-1985	United States to Korea	0.560

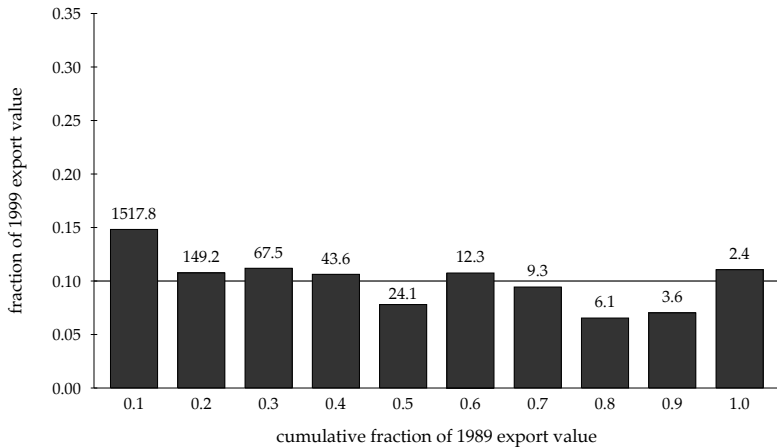
The Extensive Margin and Small Changes

- How does the extensive margin change over the business cycle?
 - ▶ U.S. largest trading partners without liberalization or structural transformation

Composition of Exports: United Kingdom to United States



Composition of Exports: United States to United Kingdom



Share of Least-Traded goods: Structural Transformation

Period	Trade flow	Share of total exports
1989-1999	Germany to United States	0.139
1989-1999	United States to Germany	0.123
1989-1999	Japan to United States	0.118
1989-1999	United States to Japan	0.126
1989-1999	United Kingdom to United States	0.120
1989-1999	United States to United Kingdom	0.148

Decomposing Trade Growth

- Based on Feenstra (1994)
- Exports of good i from m to n at time t : $x_{i,t}^{mn}$
- Set of goods exported at t : I_t , and $I = I_{t_0} \cap I_{t_1}$
- Intensive margin growth rate

$$\frac{\sum_{i \in I} x_{i,t_1}^{mn}}{\sum_{i \in I} x_{i,t_0}^{mn}} = 1 + \gamma_{IM}^{mn}$$

- Extensive margin growth rate

$$\frac{\sum_{i \in I_{t_1}} x_{i,t_1}^{mn}}{\sum_{i \in I_{t_0}} x_{i,t_0}^{mn}} / \frac{\sum_{i \in I} x_{i,t_1}^{mn}}{\sum_{i \in I} x_{i,t_0}^{mn}} = 1 + \gamma_{EM}^{mn}$$

- In logs, growth in total trade is the sum of the extensive and intensive margin growth

$$\gamma^{mn} = \gamma_{EM}^{mn} + \gamma_{IM}^{mn}$$

Decomposing Total Trade Growth: NAFTA

		log difference [contribution to total]		
		total trade	extensive margin	intensive margin
1989-1999	Canada-Mexico	0.716	0.120 [16.7]	0.597 [83.3]
1989-1999	Mexico-Canada	1.565	0.097 [6.2]	1.468 [93.8]
1988-1998	Canada-U.S.	0.788	0.092 [11.7]	0.696 [88.3]
1988-1998	U.S.-Canada	0.706	0.061 [8.7]	0.645 [91.3]
1989-1999	Mexico-U.S.	1.486	0.136 [9.2]	1.350 [90.8]
1989-1999	U.S.-Mexico	1.310	0.088 [6.7]	1.222 [93.3]

Decomposing Total Trade Growth: Structural Transformation

		log difference [contribution to total]		
		total trade	extensive margin	intensive margin
1975-1985	Chile-U.S.	1.962	0.033 [1.7]	1.929 [98.3]
1975-1985	U.S.-Chile	0.987	0.834 [84.6]	0.152 [15.4]
1995-2005	China-U.S.	1.683	0.258 [15.4]	1.424 [84.6]
1995-2005	U.S.-China	1.308	-0.113 [-8.6]	1.421 [108.6]
1975-1985	Korea-U.S.	3.157	1.015 [32.1]	2.143 [67.9]
1975-1985	U.S.-Korea	1.892	0.580 [30.7]	1.312 [69.3]

Decomposing Total Trade Growth: Business Cycles

		log difference [contribution to total]		
		total trade	extensive margin	intensive margin
1989-1999	Germany-U.S.	0.842	0.086 [10.2]	0.756 [89.8]
1989-1999	U.S.-Germany	0.741	-0.017 [-2.3]	0.759 [102.3]
1989-1999	Japan-U.S.	0.342	0.002 [0.6]	0.340 [99.4]
1989-1999	U.S.-Japan	0.375	0.003 [0.8]	0.373 [99.2]
1989-1999	U.K.-U.S.	0.788	0.022 [2.8]	0.765 [97.2]
1989-1999	U.S.-U.K.	0.659	0.015 [2.2]	0.644 [97.8]

The Extensive Margin: the Wrap-up

- When is the extensive margin important?
 - ▶ NAFTA pairs: extensive margin accounts for 10% of growth
 - ▶ Chile, China, Korea: ext. margin accounts for 26% of growth
 - ▶ Business cycles: extensive margin accounts for 2.4% of growth