

Accounting for the New Gains from Trade Liberalization

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What we do

Re-visit effects of 1989 Canada-US Free Trade Agreement (CUSFTA) on Canadian welfare with focus on firm entry/exit effects emphasized by “New Trade” literature (Krugman (1980) and Melitz (2003)):

- 1 theory-consistent decomposition of welfare effects including effects of entry and exit on average **productivity**
- 2 data on entry and exit of Canadian (ASI) and US (Manufacturing Census and trade data) manufacturing firms from Canadian market

Entry/exit related to CUSFTA has a **negative** effect on Canadian welfare, despite positive effects of CUSFTA overall (due to what we call “traditional gains”)

Selection effects in Melitz (2003)

- Monopolistic competition with heterogeneous firm productivity
- Most productive firms export and sell in foreign markets where they face trade costs; less productive firms only sell to domestic market; least productive firms exit
- Domestic tariff cuts lead to entry by foreign firms:
 - competition leads to **exit of least productive domestic firms, raising domestic average productivity** but *consumers lose domestic varieties*
 - consumers gain access to **new imported foreign varieties** but productivity of new foreign entrants is lower than foreign incumbents, *lowering average productivity of foreign firms selling to Canada*

Literature

- Gains from import variety: Feenstra (1994), Broda and Weinstein (2004, 2006), Chen and Jacks (2012)
- Productivity effects of entry/exit by domestic firms and CUSFTA: Head and Ries (1999), Baggs, Head and Ries (2002), Trefler (2004), Baldwin and Gu (2002), Lileeva (2008), Melitz and Trefler (2012)
- “New gains from trade”: sum of these domestic and foreign, variety and average productivity, effects due to firm entry/exit
- “Traditional gains”: imports from continuing foreign firms get cheaper (direct effect of lower import tariffs and related substitution/terms-of-trade effects)

Intuition for productivity measurement

- Old view: $\text{productivity} = \text{revenue} / \text{worker}$ (or $\text{revenue} / f(\text{inputs})$)
- New trade view: more productive firms expand and hire more workers, which requires them to lower their prices. In equilibrium $\text{revenue} / \text{worker}$ proportional to $\text{marginal revenue of labor} = \text{marginal cost of labor (wage)}$
- Implication: firms with same input costs equalize $\text{revenue} / \text{worker}$ regardless of productivity; higher productivity is reflected in firm size (e.g. revenues, employment)

Intuition for variety effects and welfare

- Old view: ignore variety (products are perfect substitutes), so best outcome is to have only the single most productive firm remain
- New trade view: firms/varieties are imperfect substitutes and consumers value choice/diversity
- Implication: infer consumer valuation by comparing market share of entering and exiting firms relative to market share of continuing firms; higher shares imply higher valuation

Decomposition gives overall effect of entry/exit on welfare, which can be further decomposed into **variety** (number of entrants/exiters firms) and **productivity** (whether entrants/exiters had higher average revenues than continuers)

TABLE 4: "NEW" GAINS FROM CUSFTA OF CANADA

A: Annualized welfare effects of domestic entry and exit (Canadian plants)			
	Pre-trend	CUSFTA	Difference
Net welfare effect	-0.14%	-0.56%	-0.42%
Net variety effect	1.14%	-0.50%	-1.64%
Net productivity effect	-1.28%	-0.05%	1.22%
Welfare loss from exit	-1.04%	-1.52%	-0.49%
Variety loss	-2.69%	-3.17%	-0.47%
Productivity gain	1.66%	1.65%	-0.01%
Welfare gain from entry	0.90%	0.96%	0.07%
Variety gain	3.83%	2.66%	-1.17%
Productivity loss	-2.93%	-1.70%	1.23%
B: Annualized welfare effects of foreign entry and exit (US exporters)			
		CUSFTA	Difference
Net welfare effect		0.19%	0.19%
Net variety effect		1.90%	1.90%
Net productivity effect		-1.71%	-1.71%
Welfare loss from exit		-1.62%	-1.62%
Variety loss		-2.93%	-2.93%
Productivity gain		1.31%	1.31%
Welfare gain from entry		1.81%	1.81%
Variety gain		4.83%	4.83%
Productivity loss		-3.02%	-3.02%

Figure 1: Overall domestic "new" gains from CUSFTA

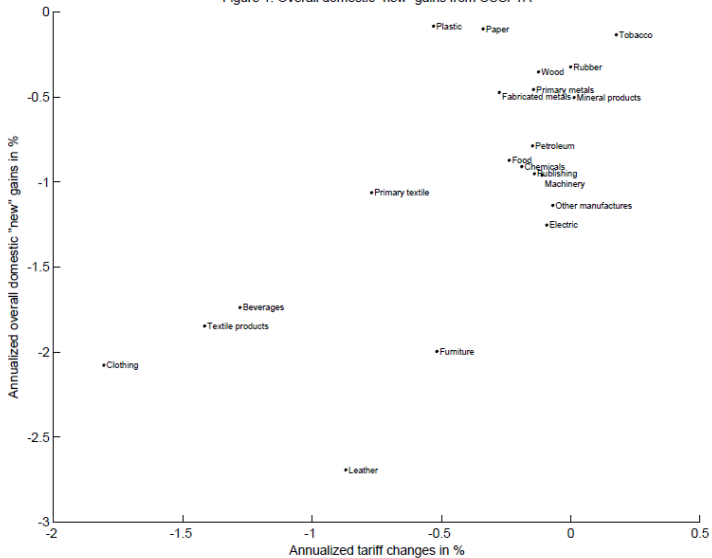


Figure 2: Domestic net variety gains from CUSFTA

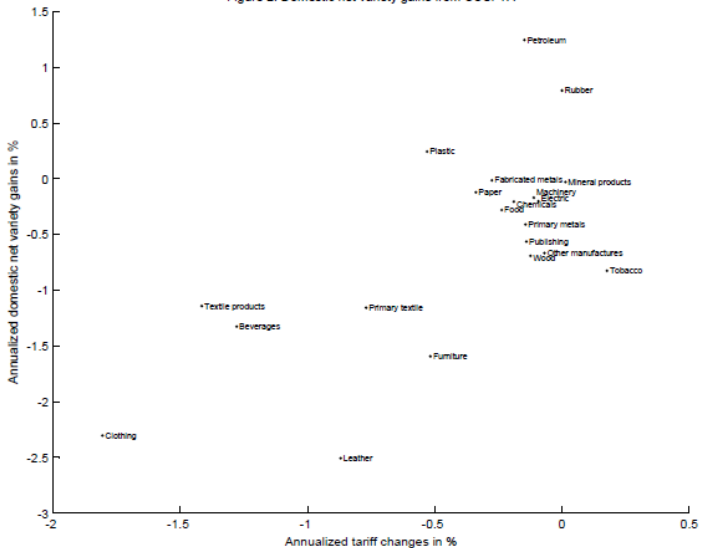


Figure 3: Domestic net productivity gains from CUSFTA

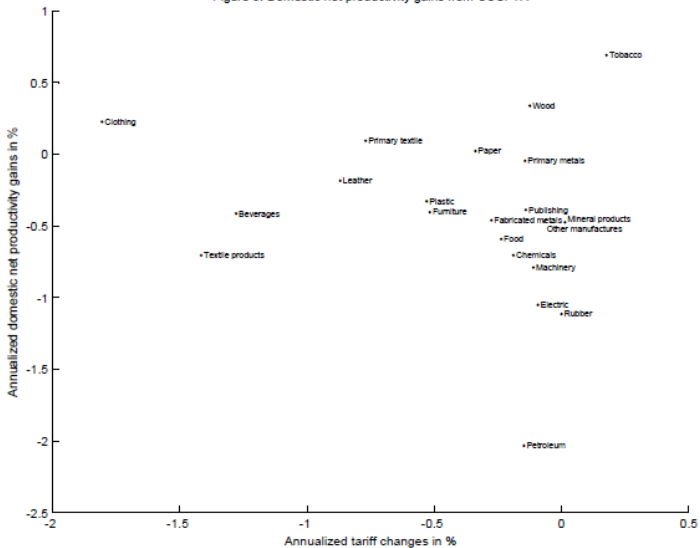
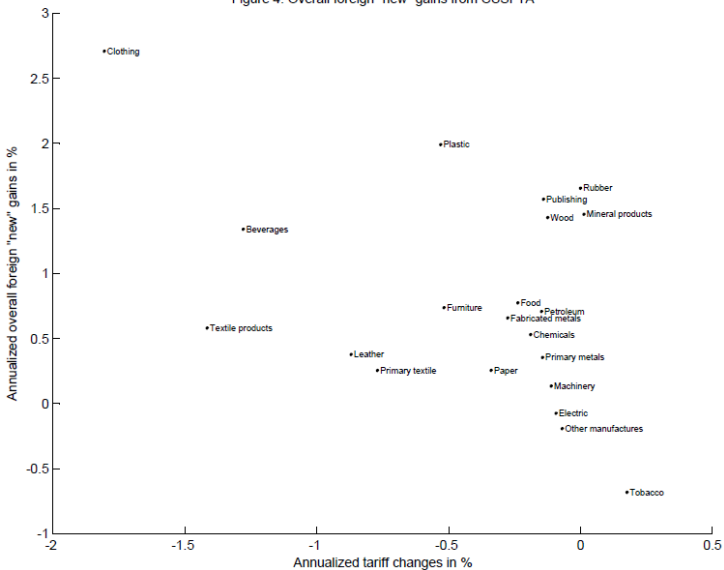


Figure 4: Overall foreign "new" gains from CUSFTA



Magnitudes

- Different estimates for annualized welfare effects of CUSFTA during the period 1988-1996 due to entry/exit, ranging from -0.13% to -0.34%
- With/without pre-trend controls, using aggregate changes, industry changes, or cross-industry changes predicted by tariff changes, adjusting for non-traded goods and intermediate inputs, controlling for US and Mexican import tariffs
- Even taking the highest estimate for losses (-0.34%), the overall gains during CUSFTA period were still positive (0.55%) due to large “traditional gains” (0.89%)

Caveats

- 1 Indirect measures of US firm entry into Canadian market (export status of firms or schedule B/HS10 level product imports)
- 2 Entry/exit at the *firm* level: miss changes in product variety for continuing multi-product firms (swept into continuing firm productivity)
- 3 Everything calculated relative benchmark of continuing Canadian firms; to the extent that their productivity increased because of CUSFTA we underestimate total welfare gains and relative value of entrants (vs. exiters)

Conclusions

- Existence of entry/exit effects from trade need not increase the magnitude of gains from trade; need to account for offsetting domestic/foreign variety and productivity effects
- Unclear which theoretical assumptions on productivity distribution and entry/exit would be needed to generate our empirical findings – likely need more than one dimension of firm heterogeneity
- Desired data: firm-product data with prices and quantities for domestic and foreign firms serving domestic market; UPC data sets hard to link to location of production and firms

Empirical analysis

CUSFTA cut tariffs from an (SIC 2-digit) average of 8% to 2% during 1988-1996

- Compare firms that sold to Canada in both 1988 and 1996 (continuers) to exiters (exist in 1988 but not 1996) and entrants (exist in 1996 but not 1988) in Canada's ASI and the US Manufacturing census (1987 and 1997)
- There were many trends in manufacturing during this period; one solution is to assume that the 1980-1988 trend would have continued absence CUSFTA and look at the difference in pre vs. post CUSFTA differences
- Alternative solution (similar to Trefler (2004)) is to use cross-industry variation in tariff rate cuts
- Other than census micro-data and tariffs the only data we need to implement our formula is an estimate of the elasticity of substitution (overall or by industry) which we take from Oberfield and Raval (2014)