

The Sectoral Impact of an Integration Agreement between MERCOSUR and NAFTA: the Case of the Petrochemical Industry

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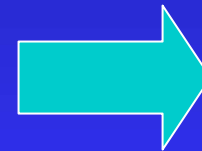
Buenos Aires, Argentina

Objective

- To evaluate the potential trade and welfare effects of a MERCOSUR-NAFTA integration agreement in the Petrochemical Industry (PCI)
- MERCOSUR would have a “defensive” interest in this industry, considering that NAFTA countries (specially the U.S.) have comparative advantages for their exports.

Petrochemical Products

- Basic: olefins, aromatics, methanol, ammonia, etc.
- Intermediate: adipic acid, cyclohexane, vinyl chloride, styrene, phenol, etc.
- Final:
 - 1) Thermoplastics
 - 2) Thermoestables
 - 3) Elastomers
 - 4) Synthetic Fibers
 - 5) Fertilizers
 - 6) Detergents
 - 7) Solvents
 - 8) Plasticizers



They are
consumed
by other
industries

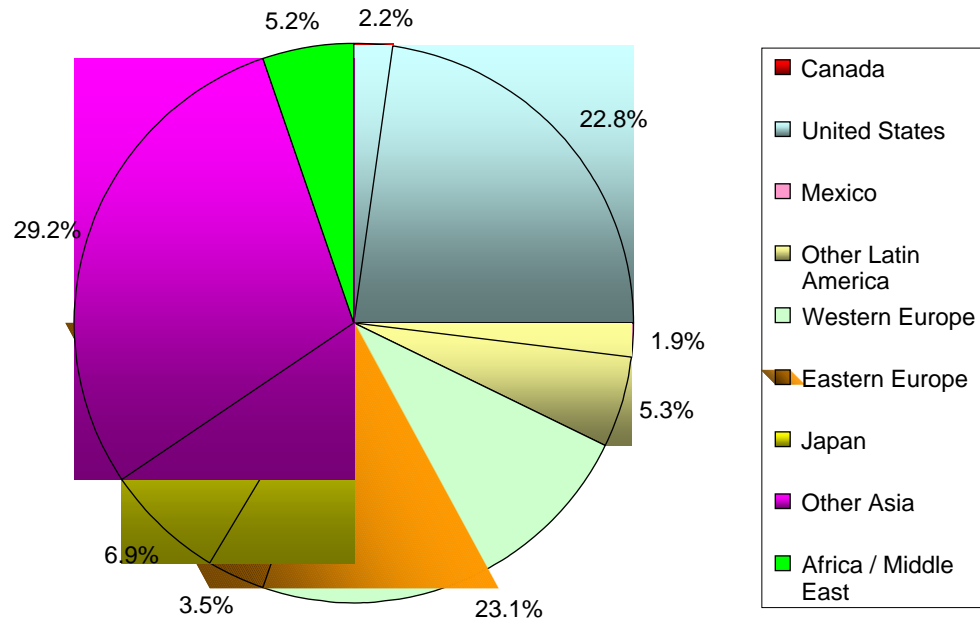
Characteristics of the PCI

- Highly capital intensive
- Scale economies are very important
- High degree of vertical integration
- Horizontal integration is also important
- Large and lumpy investments with long gestation periods

Characteristics of the PCI (cont.)

- Costs and access to feedstocks (petroleum, gas) are key competitive factors
- Oligopolistic competition
- International price cycles
- Trade intensity is higher in the segment of final products

World Consumption of Commodity Thermoplastics. 2000



Source: The Society of the Plastics Industry (SPI), Plastic Data Source.

The PCI in NAFTA countries

- The industry is very important in the three member countries
- Cheap and abundant raw materials
- U.S. is the largest world market
- Plants with efficient scales and *state of the art* technologies (mainly in Canada and U.S.)
- Low import tariffs
- Significant increase in intra-industry/intra-regional trade
- Growing imports in Mexico while production stagnates

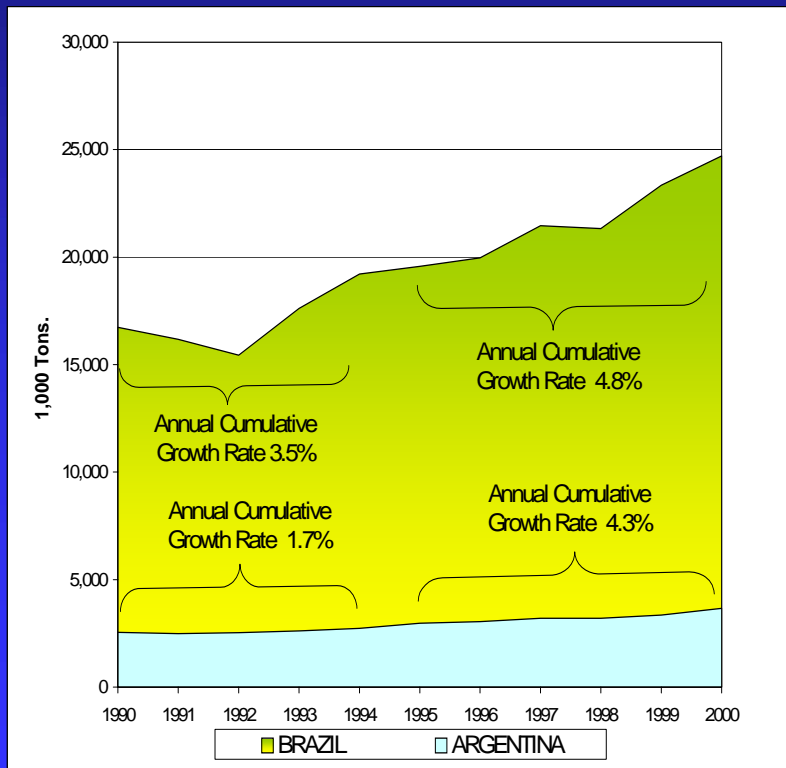
The PCI in MERCOSUR countries

- Concentrated in Argentina and Brazil
- Until the 80s, the PCI was based on State promotion and a high degree of protection
- During the 90s: trade liberalization (although import tariffs are somewhat higher than in NAFTA), privatizations, deregulation and elimination of subsidies
- Abundant and cheap natural gas in Argentina
- Bilateral trade between Argentina and Brazil grew notably after MERCOSUR creation

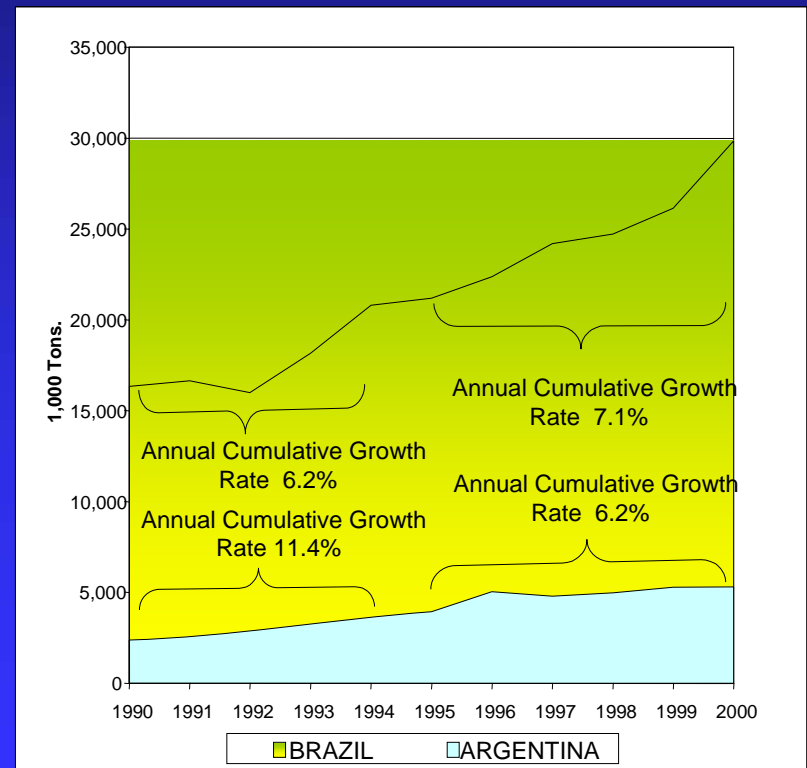
PCI in MERCOSUR.

The Evolution during the 90s

Production



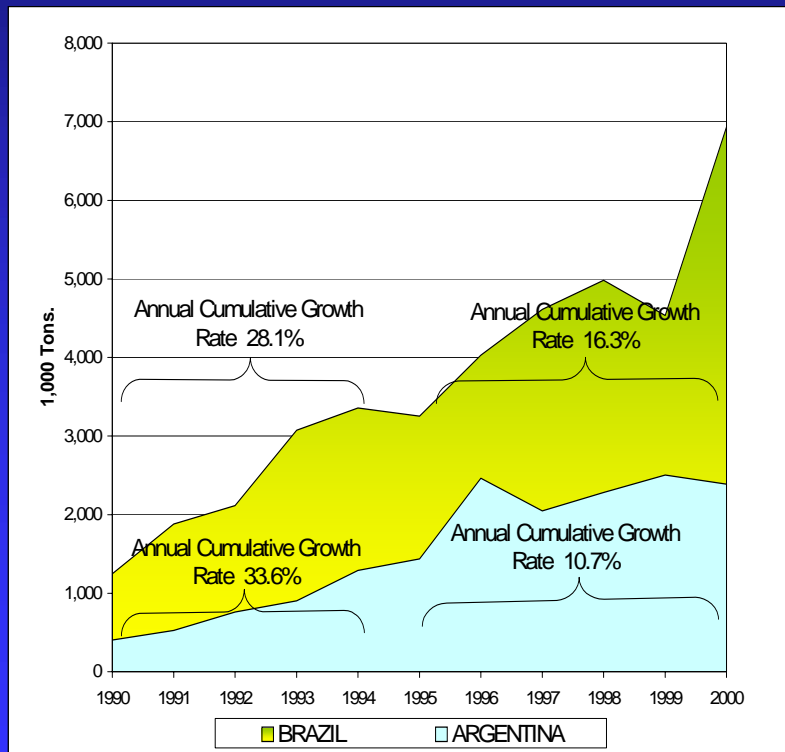
Consumption



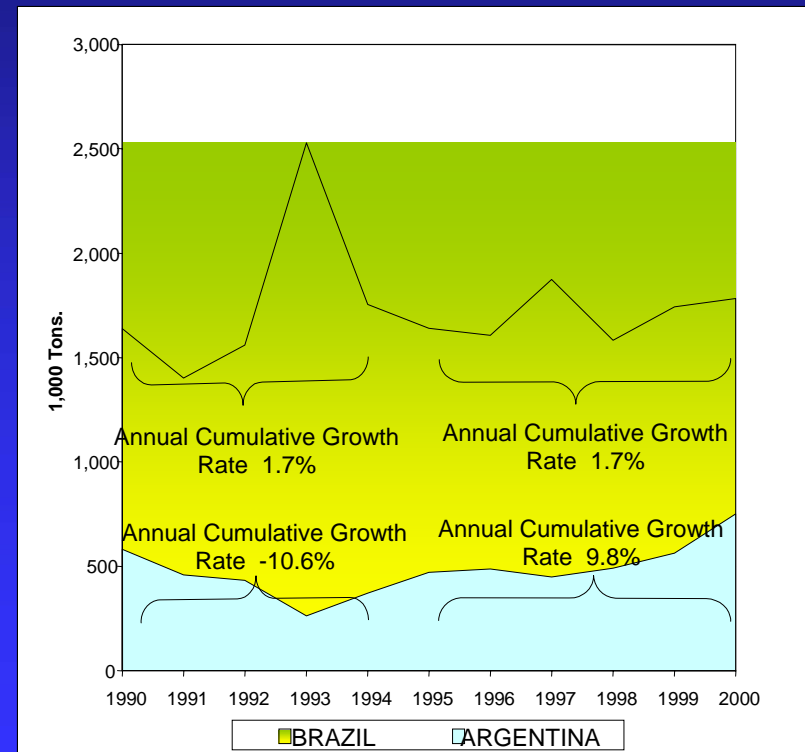
PCI in MERCOSUR.

The Evolution during the 90s (cont.)

Imports



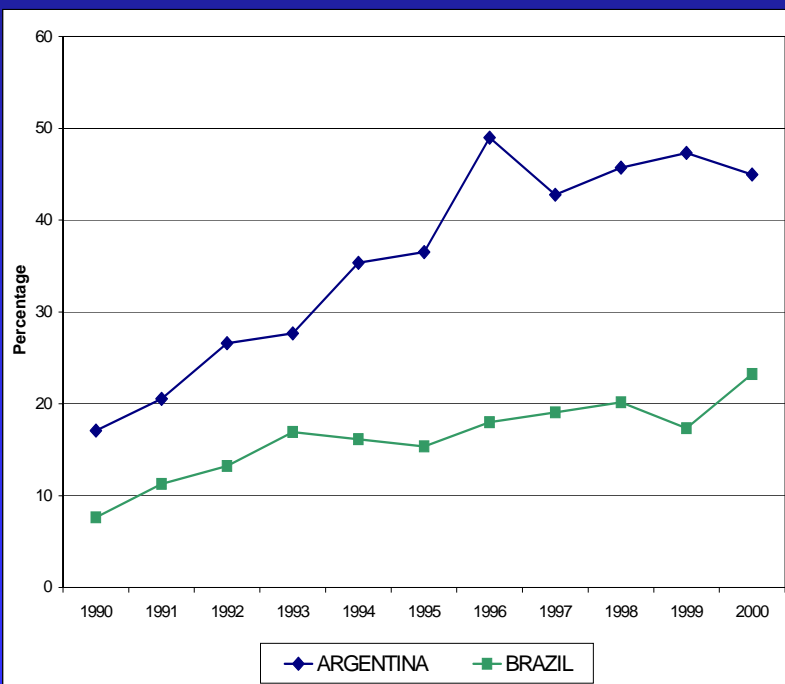
Exports



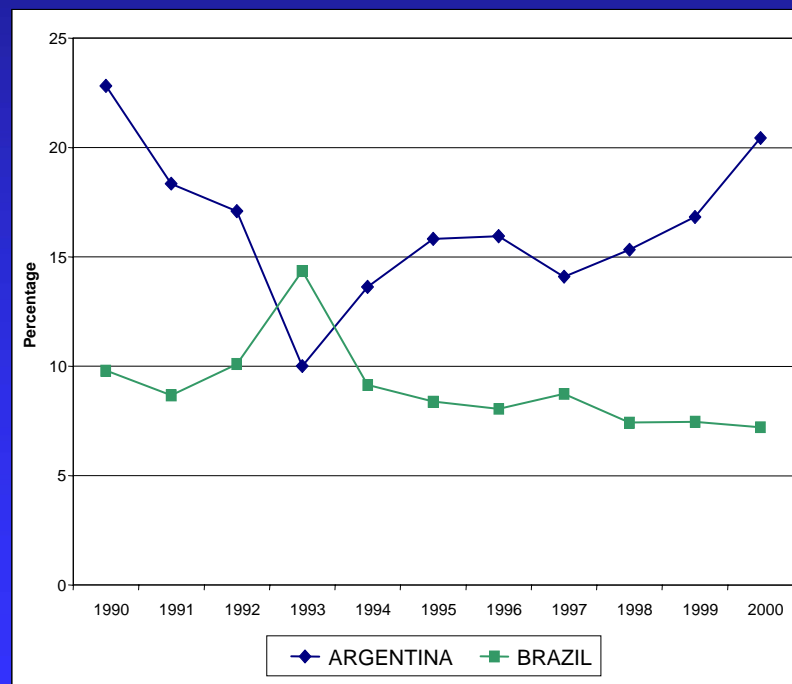
PCI in MERCOSUR.

The Evolution during the 90s (cont.)

Imports / Consumption



Exports / Production



To undertake our study, we selected a representative sample of ten products

- Basic: ethylene and methanol

- Intermediate: adipic acid

- Final:

Thermoplastics: polyvinyl chloride (PVC), high density polyethylene (HDPE), low density polyethylene (LDPE), polystyrene (PS), polypropylene (PP)

Elastomers: styrene-butadiene rubber

Fertilizers: urea

They represent between 30% and 45% of PCI total production and trade in Argentina and Brazil

Trade Balance in 1999 (selected products)

	Total Exports	Trade Balance	Imports from NAFTA / MERCOSUR	Share in total imports
	US\$ Mill.	US\$ Mill.	US\$ Mill.	%
MERCOSUR				
Argentina	113.0	-276.0	76.4	20.9
Brazil	390.4	44.9	65.3	21.9
NAFTA				
USA	3,566.0	924.6	16.7	0.6
Canada	1,999.1	640.1	2.2	0.2
Mexico	325.6	-869.3	3.5	0.3

Scale Comparisons

- The bulk of the plants are above the minimum efficient scale, both in MERCOSUR as well as in NAFTA
- U.S. has the largest plants (differences are up to 7 to 1 in relation to Brazil and 20 to 1 *vis a vis* Argentina)
- Brazilian plants have, on average, a slightly lower scale than those of Canada
- Argentine plants are similar to those of Mexico

Revealed Comparative Advantages (RCA) Index. 1999

Product	ARGENTINA	BRAZIL	MERCOSUR
Adipic Acid	-0.4330	0.1489	-0.0477
SBR	0.2777	0.3969	0.3590
Methanol	-0.1863	-0.2419	-0.2230
PVC	-0.3372	-0.0465	-0.1464
PS	0.2999	-0.4486	-0.1979
HDPE	-1.4018	0.7408	0.0182
LDPE	-1.1610	0.6132	0.0130
PP	0.0478	0.2252	0.1650
Ethylene	-0.2590	-0.0051	-0.0919
Urea	-1.1388	-0.7960	-0.9130

Product	USA	CANADA	MEXICO	NAFTA
Adipic Acid	0.0193	0.0815	-0.0160	0.0287
SBR	0.1004	-0.2040	0.2141	0.0567
Methanol	-0.1336	0.1115	-0.0710	-0.0830
PVC	0.2612	-0.4377	0.1111	0.1365
PS	0.1227	-0.1082	-0.0594	0.0652
HDPE	0.1495	0.6537	-1.0218	0.1472
LDPE	0.4619	0.6561	-0.9377	0.3757
PP	0.4908	-0.4633	-1.0146	0.1663
Ethylene	0.0174	0.0079	0.1240	0.0288
Urea	-0.2266	0.6558	-0.3419	-0.0504

Patterns of Trade Specialization

- In most products, MERCOSUR has comparative disadvantages while U.S. and Canada have comparative advantages
- There are no products with comparative disadvantages in U.S. and comparative advantages in MERCOSUR
- However, this kind of complementarity arises for some products in the case of Mexico and MERCOSUR

Welfare Effects Analysis

- We estimated post-integration efficiency gains using a computable partial equilibrium model
- A sensitivity analysis of the obtained results was made on the basis of different hypotheses about the demand and supply elasticities

Results

➤ Estimated efficiency gains

Argentina → between US\$ 7.5 and US\$ 19 mill. → between 0.14 and 0.37 per cent of gross production value

Brazil → between US\$ 4 and US\$ 12 mill. → between 0.04 and 0.12 per cent of gross production value

Estimated reductions in production and local prices are small (less than 5 per cent in most cases)

Results (cont.)

- Significant increases in imports from NAFTA are estimated (in some cases higher than 100 per cent), probably displacing intra-regional imports
- Considering information on prices and foreign trade flows for 2000, annual exports from NAFTA to MERCOSUR would increase US\$ 85 million, *versus* US\$ 2 million of exports increase from MERCOSUR towards NAFTA

Conclusions

- Small efficiency gains (probably because the PCI in MERCOSUR is operating with relative low tariff barriers)
- Predominance of redistributive effects (from domestic producers to local consumers)
- Clear competitive advantages of NAFTA (scales, market size, technology, etc.)
- Strong increase in trade deficit for MERCOSUR in bilateral trade with NAFTA
- Dynamic effects need to be evaluated (where will new investments be located?)
- Key role of strategic decisions of transnational corporations operating in this industry