SAI
Law & Economics

NAFTA @ 20

RICE UNIVERSITY'S
BAKER INSTITUTE

Jaime Serra
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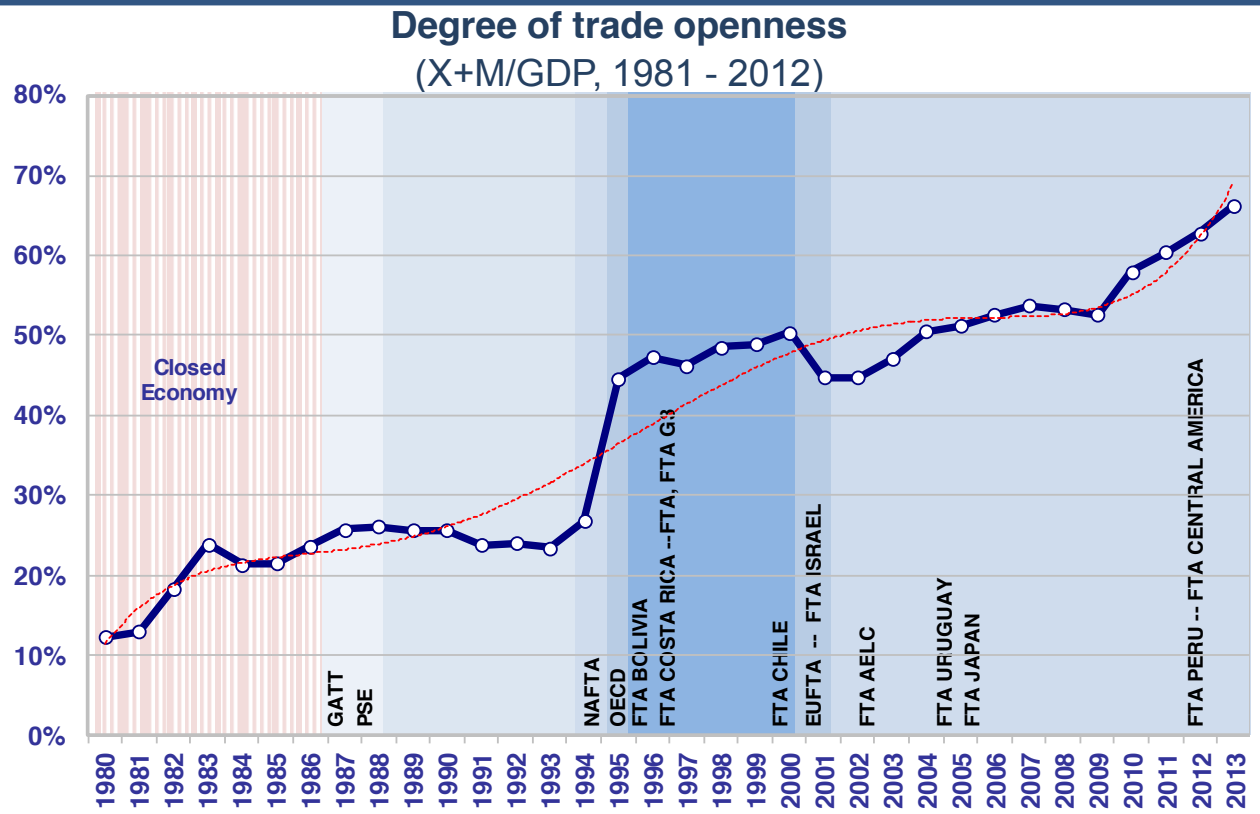
A. Trade liberalization in Mexico

A. Trade liberalization in Mexico



Dependent variable: Annual variation of trade openness

Variable	Coefficient	Std. Error	t-Statistic	P value
Dummy 1986-1987***GATT/PSE**	0.04734	0.02707	1.74853	0.09260
Dummy 1994-1995****NAFTA**	**0.11561**	**0.01980**	**5.83892**	**0.00000**
Dummy 2000-2001**EUFTA**	-0.01480	0.01558	-0.95014	0.35110
AR(1)	0.83738	0.14219	5.88911	0.00000
MA(1)	-1.08588	0.02497	-43.48797	0.00000
MA(4)	0.37436	0.01526	24.52906	0.00000

$$Y_t = \alpha_1 D_{GATT/PSE} + \alpha_2 D_{NAFTA} + \alpha_3 D_{EUFTA} + AR(1) + MA(1) + MA(4) + u_t$$

Source: SAI Law & Economics with data from INEGI.

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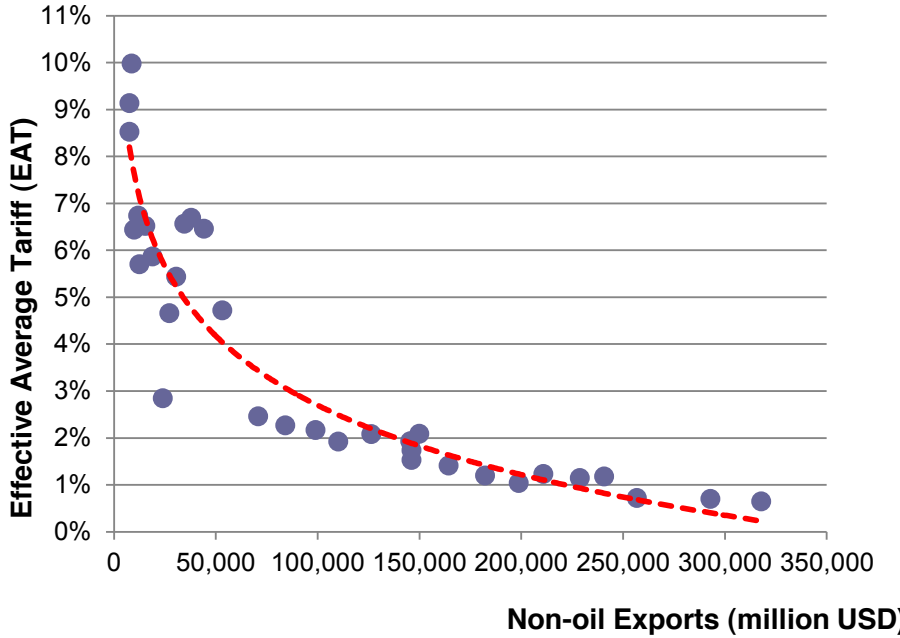
B. Effects on the Mexican economy

B. Effects on the Mexican economy: Elimination of anti-export bias

Correction of relative prices between importable & exportable goods



OLS regression to explain non-oil exports

(1981 - 2012)

Dependent variable:Annual variation in non-oil exports - Mexico

Variable	Coefficient	Std. Error	t-Statistic	Prob
Annual variation of GDP in U.S.	2.11948	0.32675	6.48654	0.00000
Annual variation in the EAT of imports[1]	-0.16868	0.07446	-2.26547	0.03110
Annual variation in the rate exchange Peso/USD[2]	-0.02873	0.06009	-0.47804	0.63620

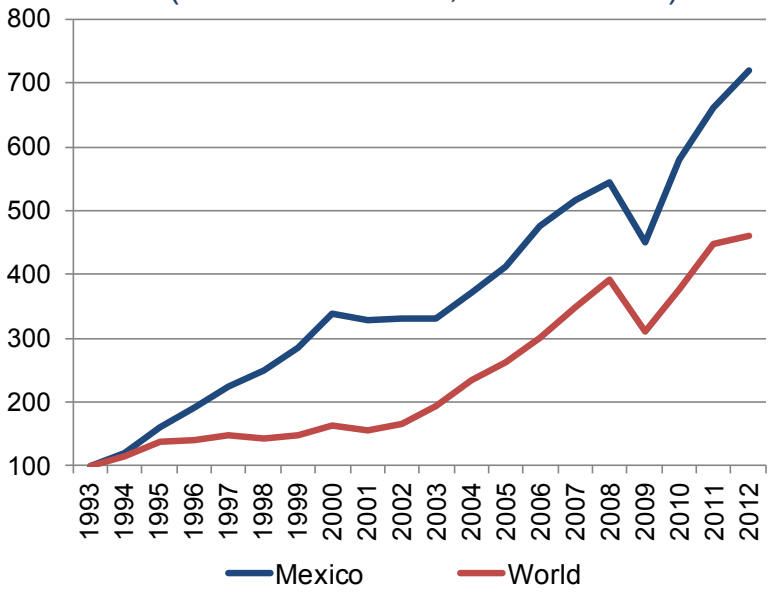
$$MX_{NOX\,t} = \beta_1 US_{PIB\,t} + \beta_2 M_{AEP\,t} + \beta_3 ER_t + \varepsilon_t$$

$MX_{NOX\,t}$ = Non-oil exports to Mexico in t (first log difference).
$US_{GDP\,t}$ = Annual variation in GDP in U.S. in t (first log difference).
$M_{AEP\,t}$ = Annual variation in the (EAT) of imports in t (first log difference)
ER_t = Annual variation in the exchange rate Peso/USD in t (first log difference).
ε_t = Error term in t.

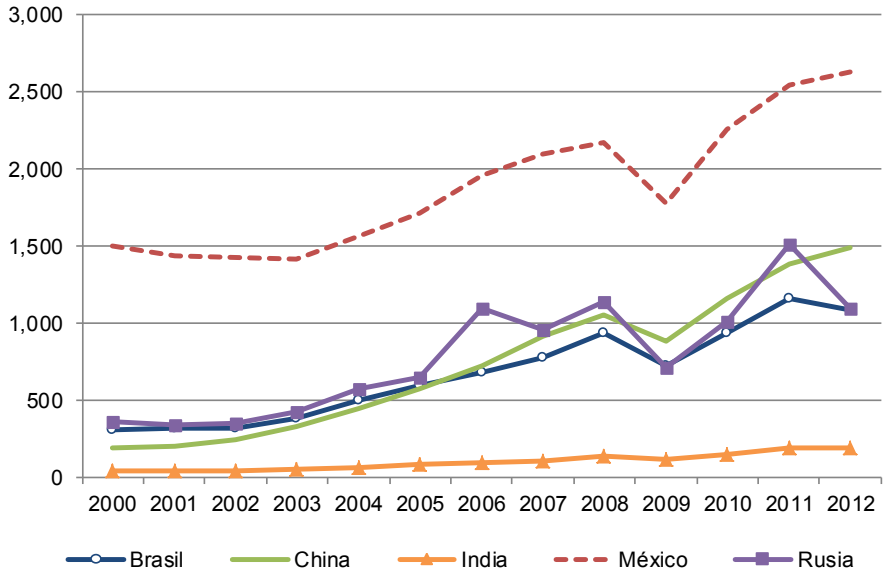
1/ The impact of the EAT (Effective Average Tariff) on non-oil exports is negative and significant.
2/ The variation in the exchange rate is not significant in the evolution of non-oil exports.
Source: SAI Law & Economics with data from Bank of Mexico.

B. Effects on the Mexican economy: Exports

Non-oil exports
(Index 1993=100, 1993 - 2012)



Per capita non-oil exports
(USD, 2000 - 2012)



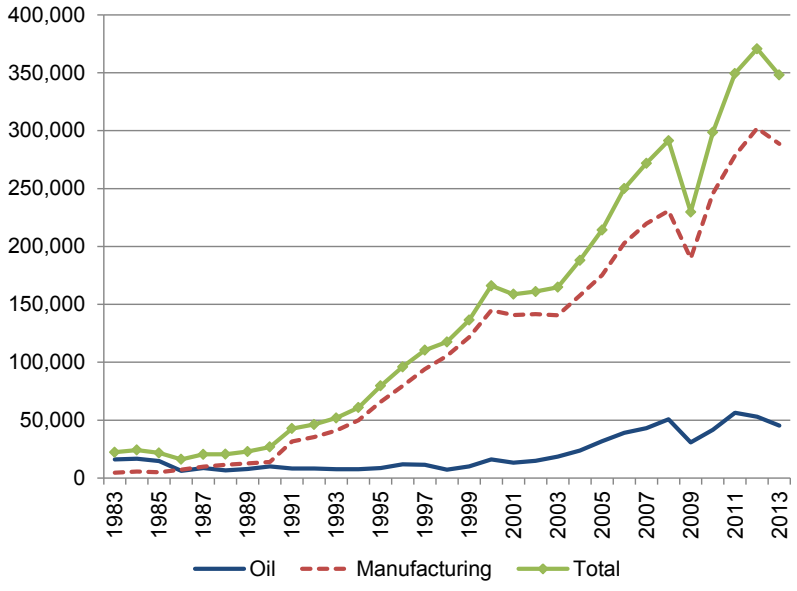
Mexican daily exports
(million USD, 1993 - 2012)

Year	Total exports	Non-oil exports
1993	144	123
2012	1,030	883

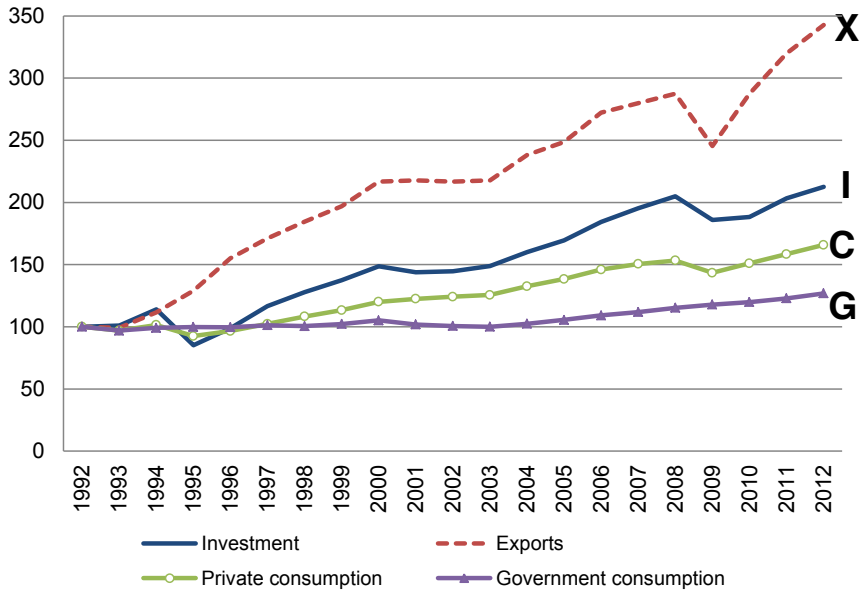
Source: SAI Law & Economics with data from World Bank.

B. Effects on the Mexican economy: Exports

Oil, manufacturing and total exports
(million USD, 1983 – 2013[1])



Components of aggregate demand
(Index 1992=100, 1992 - 2012)



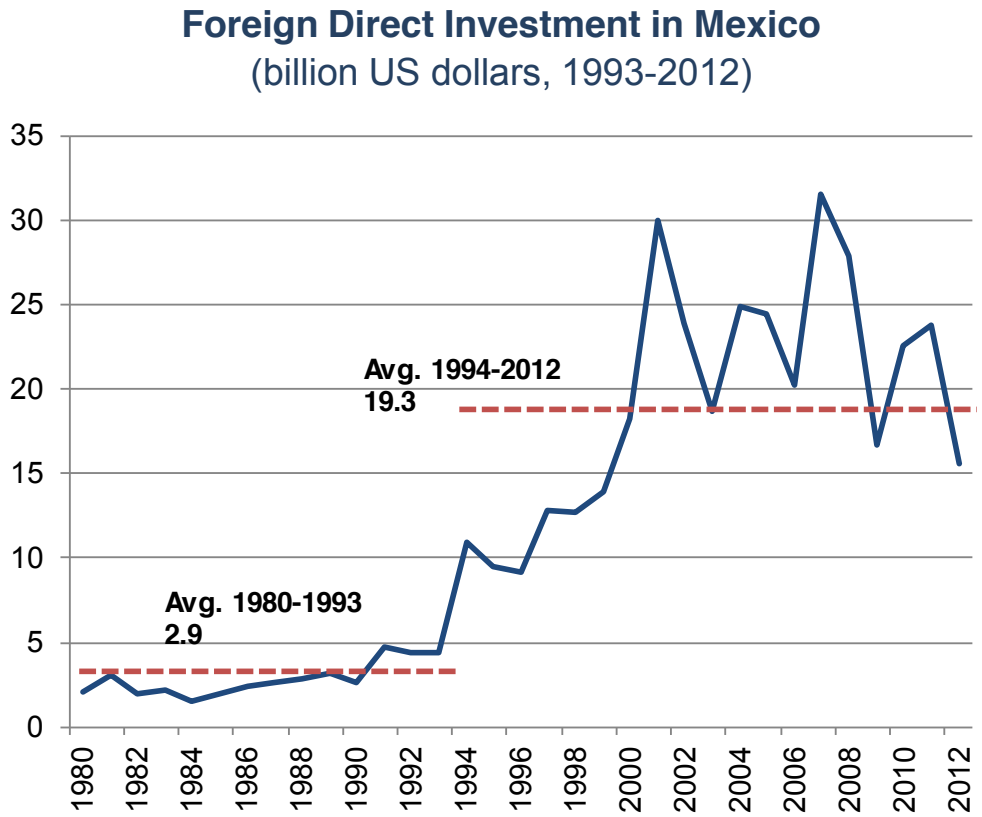
1/ Data up to November 2013.
Source: SAI Law & Economics with data fromINEGI.

B. Effects on the Mexican economy: Foreign Direct Investment

NAFTA's Chapter 11

- Reliability and certainty
- Scope (sectors liberalization)
- Dispute resolution mechanisms (Investor - State)

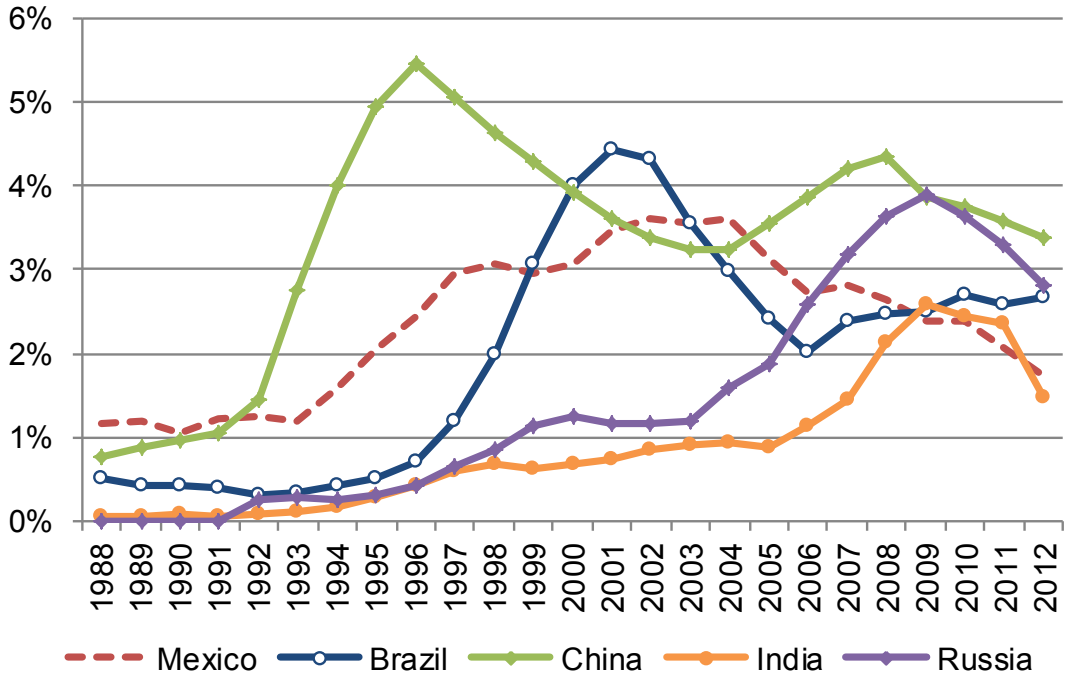
B. Effects on the Mexican economy: Foreign Direct Investment



Source: SAI Law & Economics with data from INEGI.

B. Effects on the Mexican economy: Foreign Direct Investment (Mexico vs. BRICs)

FDI as a percentage of GDP
(percentage moving average, 1988 - 2012)



FDI as a percentage of GDP, country average
(percentage, 1994-2012)

Country	1994-2012
Brazil	2.68%
China	3.97%
India	1.17%
Russia	2.03%
Mexico	2.78%
BRICs[1]	2.86%

FDI per capita, country average
(US dollars, 1994-2012)

Country	1994-2012
Brazil	159
China	78
India	11
Russia	154
Mexico	174
BRICs[1]	59

1/ Weighted average.
Source: SAI Law & Economics with data from World Bank.

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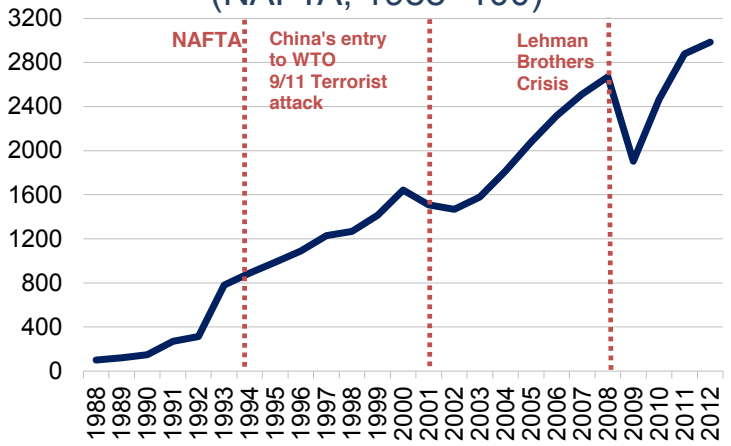
C. Effects on the region

C. Effects on the region: North America economic integration

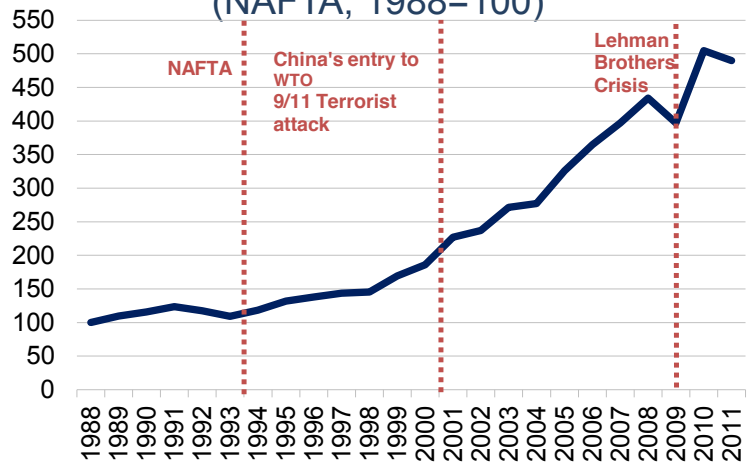
Trade subindex[1]

(NAFTA, 1988=100)



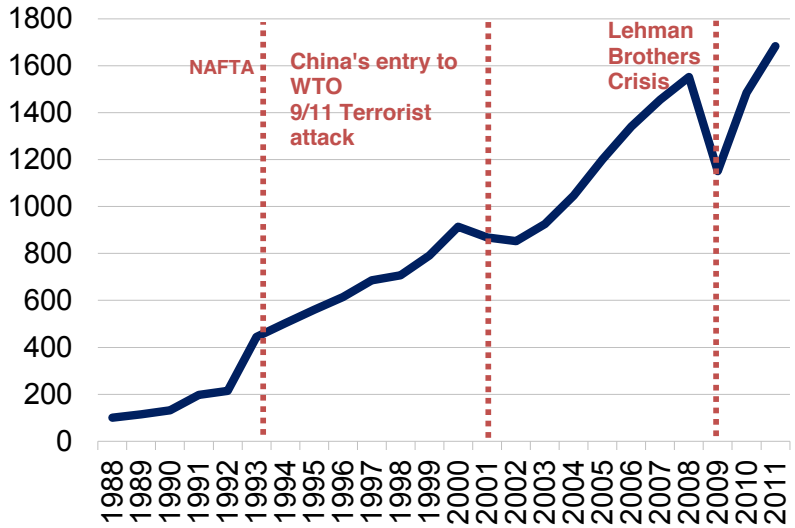
FDI subindex[2]

(NAFTA, 1988=100)



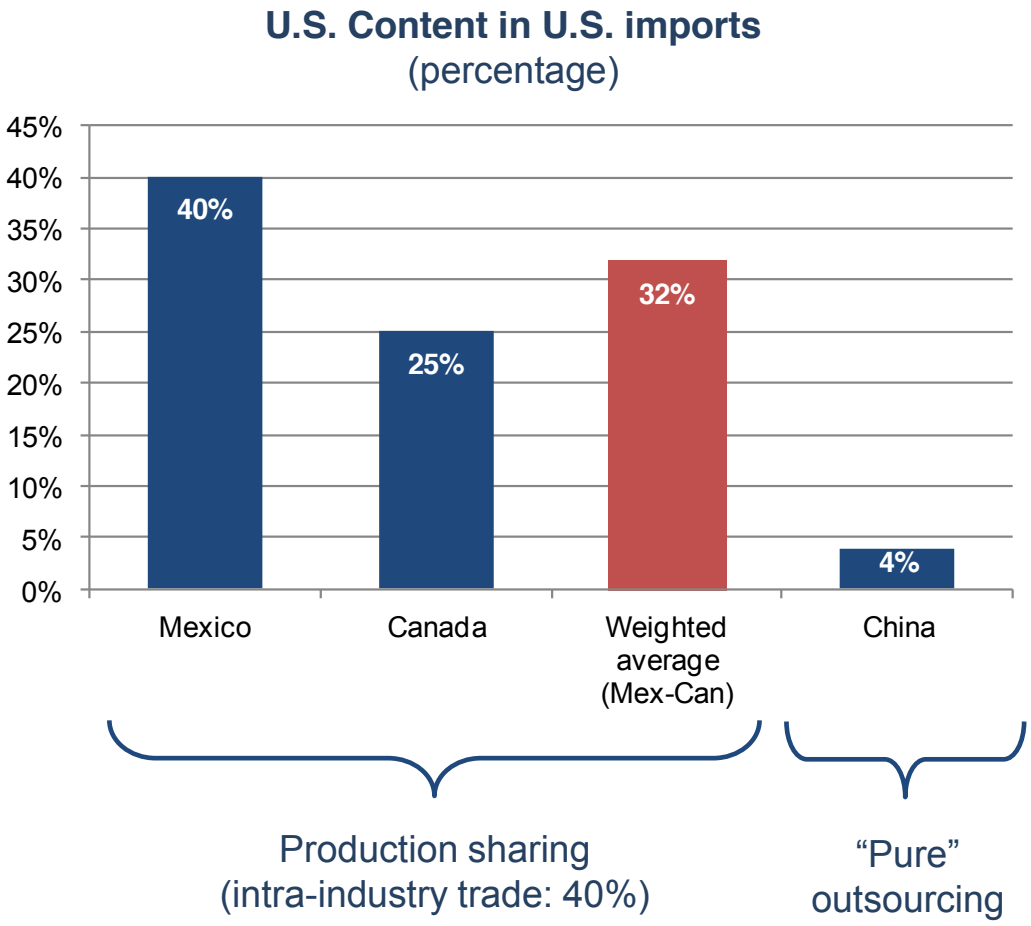
Trade & investment integration index

(NAFTA, 1988=100)



1/ Trade sub index: Weighted average of trade index (imports + exports) between Canada, Mexico and the United States.
2/ Investment sub index: Weighted average of foreign direct investment within NAFTA.
Integration index: Investment and trade sub indexes average
Source: SAI Law & Economics with data from INEGI, Bank of Mexico, Secretaria de Economía, US Census Bureau, US BEA & Statistics of Canada.

C. Effects on the region: Shared production

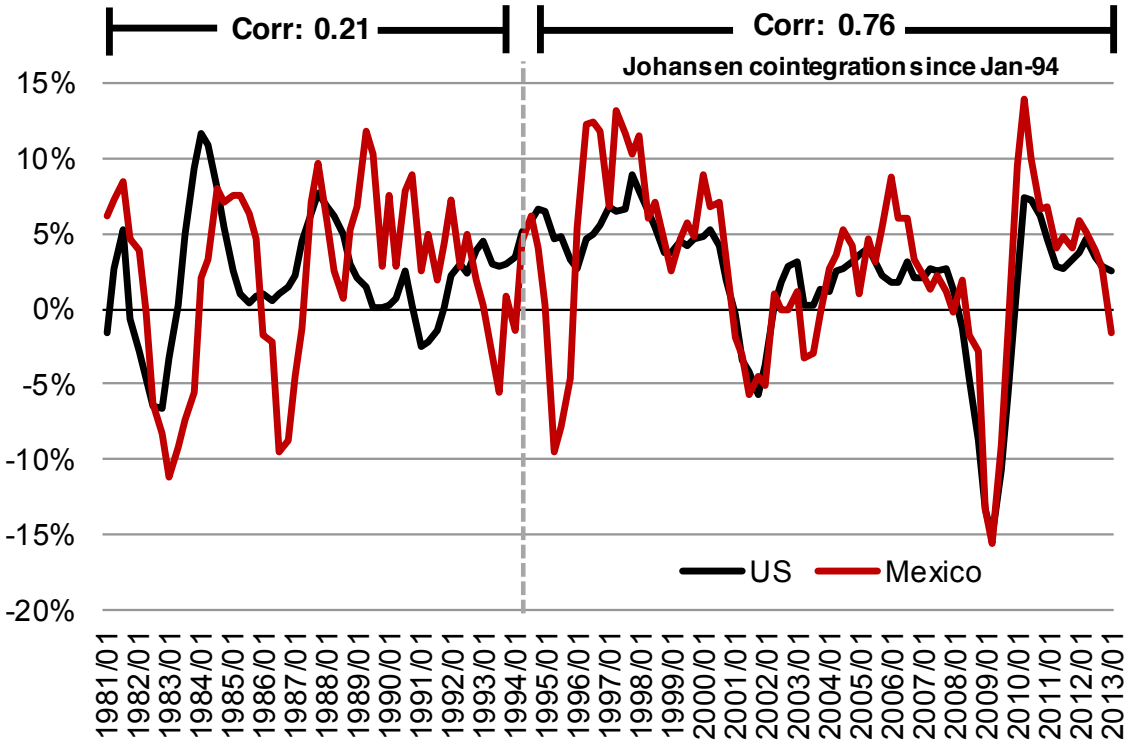


Source: Koopman et. al. (2011) "Give credit where credit is due: tracing value added in global production chains", U.S. Department of Commerce andAlix Partners, "Costs and Complexity - Will China Remain the Low-Cost Country of Choice?".

C. Effects on the region: Cycle coordination

Manufacturing production from Mexico and the Unites States

(annual growth,1981:T1-2013:T1)



Johansen Cointegration test[1]

1980:T1 –1993:T4

Series: LOG(Man.Prod.MEX) LOG(Ind.ProdUSA)

Eigenvalue	Likelihood ratio	Critical Value 5%	Critical Value 1%	Cointegrating Equations
0.115693	8.516043	15.41	20.04	**None**
0.034156	1.876684	3.76	6.65	**At most 1**

1994:T1 – 2012:T2

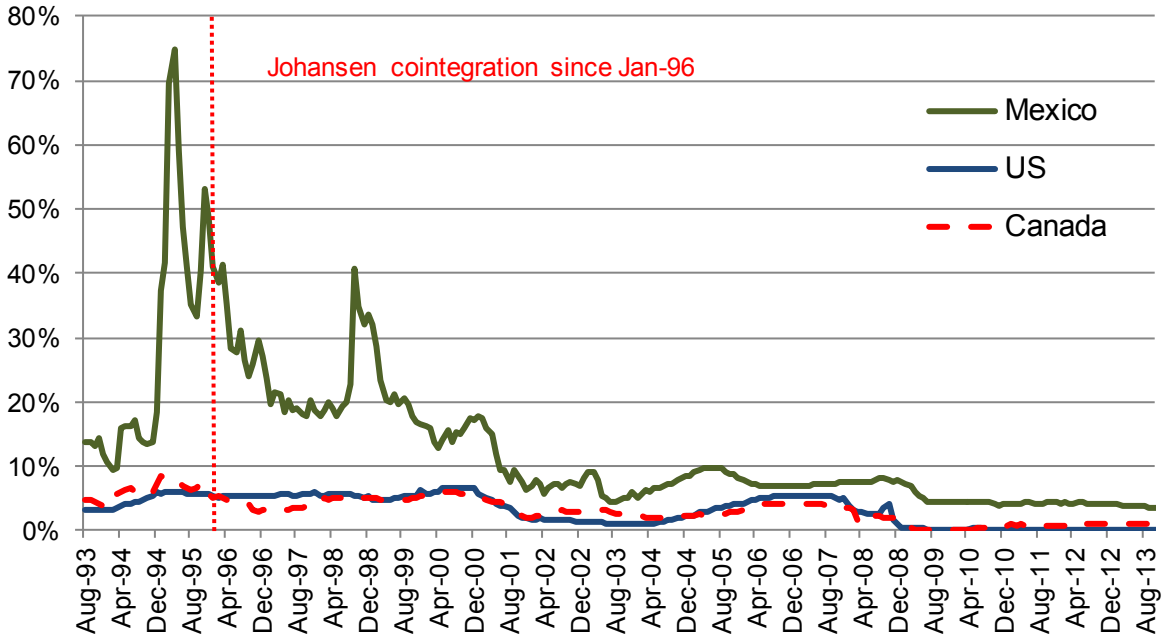
Series: LOG(Man.Prod.MEX) LOG(Ind.ProdUSA)

Eigenvalue	Likelihood ratio	Critical Value 5%	Critical Value 1%	Cointegrating Equations
0.174543	16.594320	15.41	20.04	**None ***
0.031910	2.399811	3.76	6.65	**At most 1**

* Rejects the null hypothesis with a confidence level of 95%. **Rejects the null hypothesis with a confidence level of 99%.
1/ The test supposes a deterministic lineal trend in the data.
Source: Analysis by SAI Law & Economics with data from INEGI and the US Federal Reserve.

C. Effects on the region: Macroeconomic convergence

Short-term Interest Rates
(percentage, 1993-2013)



Cointegration test
(January 1996 – December 2013)

Series: Interest rates in Mexico, Canada & United States

Eigenvalue	Likelihood ratio	Critical value 5%	Critical value 1%	Cointegrating Equations
0.117007	37.05229	29.79707	35.45817	None **
0.034787	10.17363	15.49471	19.93711	At most 1
0.011626	2.525861	3.841466	6.634897	At most 2

* denotes rejection of the null hypothesis at a significance level of 5%

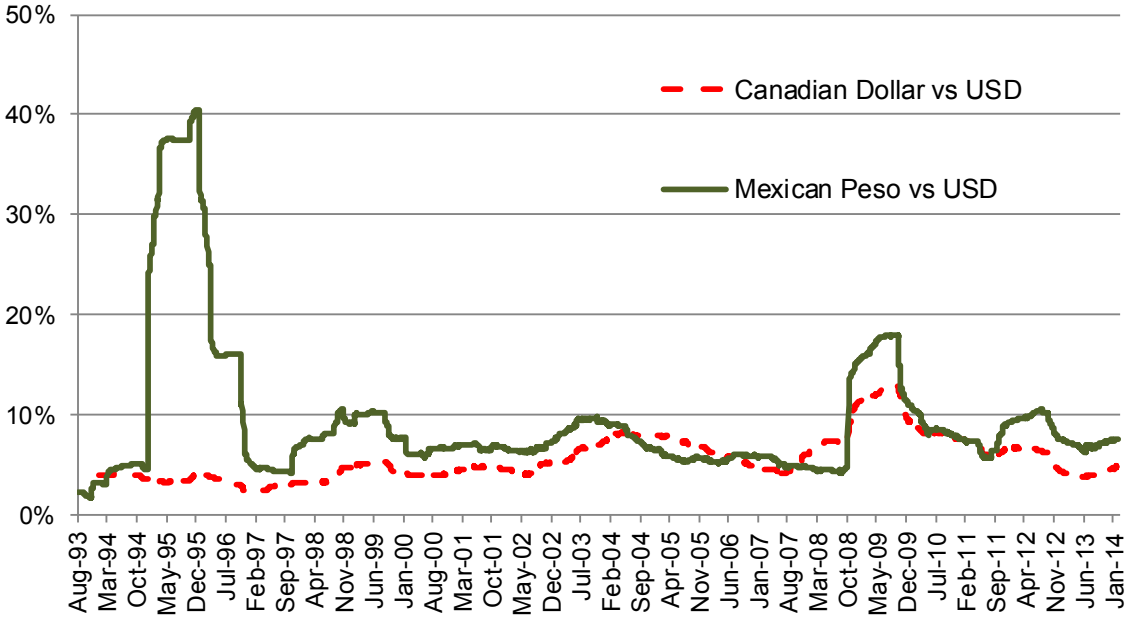
** denota el rechazo de la hipótesis nula con un nivel de significancia del 1%

Source: SAI Law & Economics with data from INEGI.

C. Effects on the region: Macroeconomic convergence

Exchange rate volatility

(standard deviation, 1993-2012)



Cointegration test

(standard deviation, January 1997– January 2014)

Series: Exchange rate vs. USD in Mexico, Canada & United States

Eigenvalue	Likelihood ratio	Critical value 5%	Critical value 1%	Cointegrating Equations
0.009095	40.52835	15.49471	19.93711	None **
0.000184	0.801363	3.841466	6.634897	At most 1

* denotes rejection of the null hypothesis at a significance level of 5%

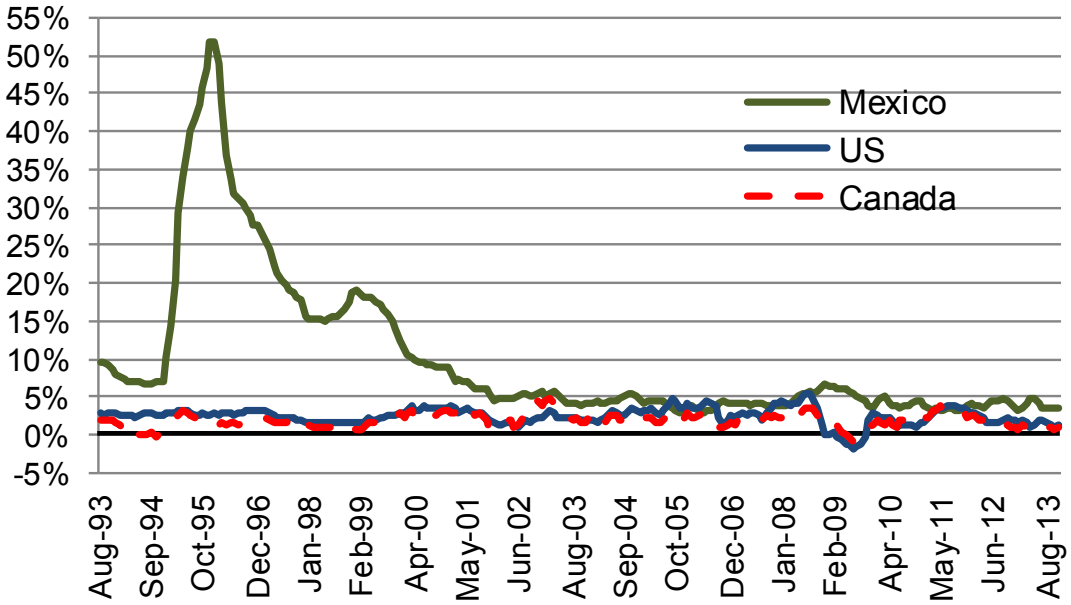
** denotes rejection of the null hypothesis at a significance level of 1%

Source: SAI Law & Economics with data from INEGI.

C. Effects on the region: Macroeconomic convergence

Inflation

(yearly variation, August 1999 – November 2013)



Cointegration test

(January 2000 – October 2013)

Series: Inflation in Mexico, Canada & United States

Eigenvalue	Likelihood ratio	Critical value 5%	Critical value 1%	Cointegrating Equations
0.120606	46.55095	29.79707	35.45817	None **
0.080837	25.85882	15.49471	19.93711	At most 1
0.073482	12.28778	3.841466	6.634897	At most 2

*denotes rejection of the null hypothesis at a significance level of 5%

** denotes rejection of the null hypothesis at a significance level of 1%

Source: SAI Law & Economics with data from INEGI.

D. Future

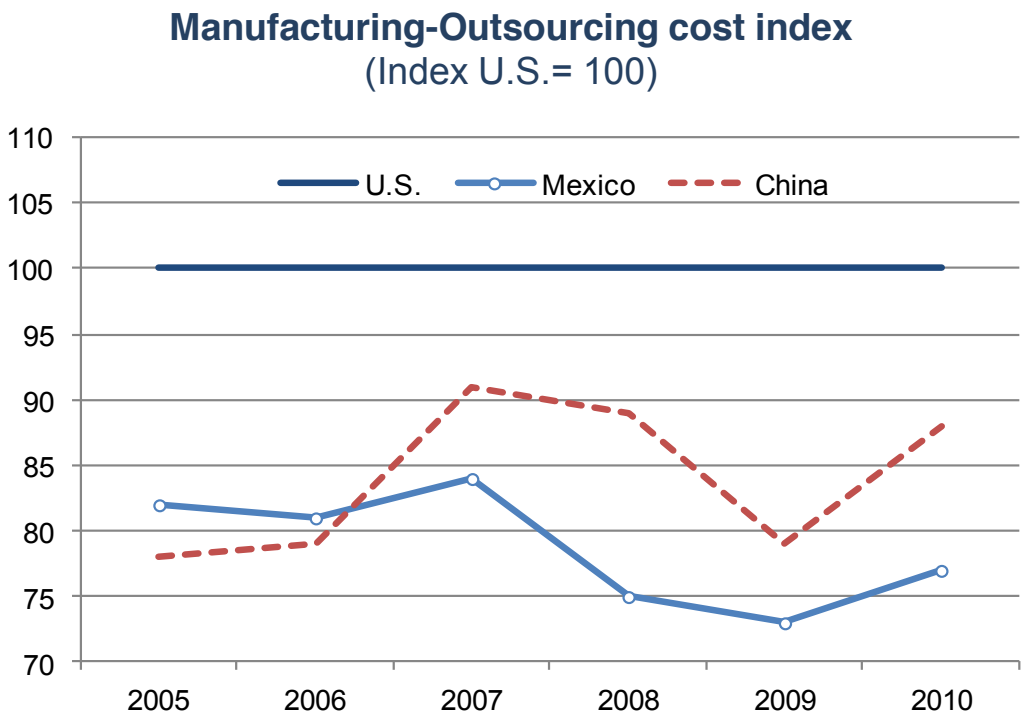
D. Future: North American competitiveness – Economic sectors

Industry profitability by country and rank
(percentage, 2011)

Industry		China	India	Mexico	Canada	US
Automotive	Profitability after tax	21.2%	18.3%	16.5%	7.0%	4.0%
	Rank	**1**	**2**	**3**	**9**	**11**
Electronics	Profitability after tax	28.7%	25.0%	22.8%	13.1%	9.5%
	Rank	**1**	**2**	**3**	**6**	**11**
Precision Manufacturing	Profitability after tax	19.2%	15.9%	14.1%	5.5%	2.5%
	Rank	**1**	**2**	**3**	**7**	**11**
Telecommunications	Profitability after tax	27.0%	24.1%	21.1%	9.0%	5.1%
	Rank	**1**	**2**	**3**	**7**	**11**
Aerospace	Profitability after tax	26.3%	23.0%	20.3%	8.4%	6.3%
	Rank	**1**	**2**	**3**	**7**	**11**
Agri-Food	Profitability after tax	23.8%	24.3%	19.5%	8.4%	6.3%
	Rank	**2**	**1**	**4**	**10**	**12**
Chemicals	Profitability after tax	20.0%	19.1%	19.1%	10.2%	7.1%
	Rank	**1**	**4**	**3**	**8**	**11**
Green Energy	Profitability after tax	24.8%	22.6%	17.6%	9.4%	5.4%
	Rank	**1**	**2**	**4**	**9**	**12**
Medical Devices	Profitability after tax	36.5%	33.0%	28.3%	10.0%	6.4%
	Rank	**1**	**2**	**3**	**9**	**11**
Metal Components	Profitability after tax	28.6%	28.7%	24.6%	10.0%	6.4%
	Rank	**2**	**1**	**3**	**10**	**12**
Pharmaceuticals	Profitability after tax	32.4%	28.2%	24.8%	11.3%	7.6%
	Rank	**1**	**2**	**3**	**8**	**11**
Plastics	Profitability after tax	29.7%	29.9%	26.0%	10.7%	8.1%
	Rank	**2**	**1**	**3**	**10**	**12**

Source: SAI Law & Economics with data from “Competitive Alternatives - KPMG Guide to International Business Location Costs”.

D. Future: North American competitiveness – Outsourcing

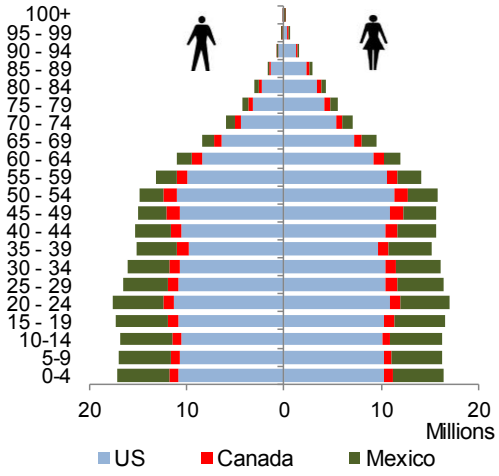


Landed costs in U.S. from low cost countries (LCC) relative to U.S. domestic manufacturing cost for a basket of parts[1].

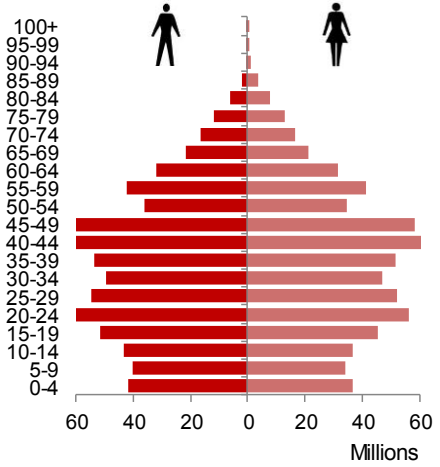
1/ AlixPartners study compares LCC cost drivers to a baseline of U.S. manufacturing costs for a basket of parts that can be made anywhere with locally sourced materials.
Source: Koopman et. al. (2011) "Give credit where credit is due: tracing value added in global production chains", U.S. Department of Commerce andAlix Partners, "Costs and Complexity - Will China Remain the Low-Cost Country of Choice?".

D. Future:
North American competitiveness – Demographics

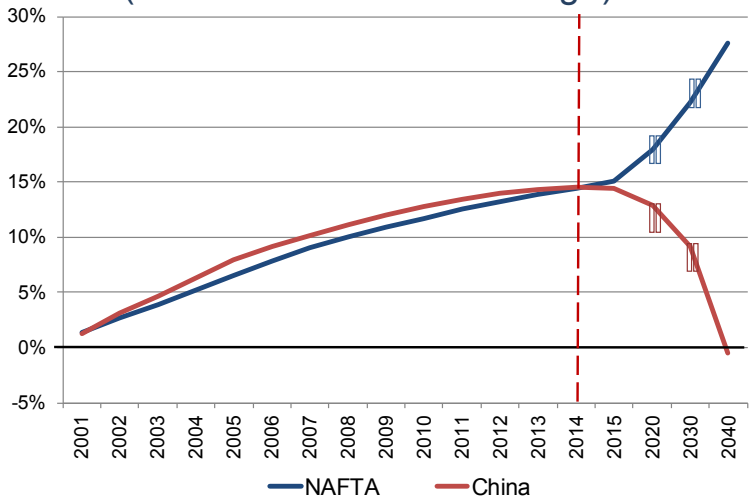
NAFTA population
(2012)



China population
(2012)

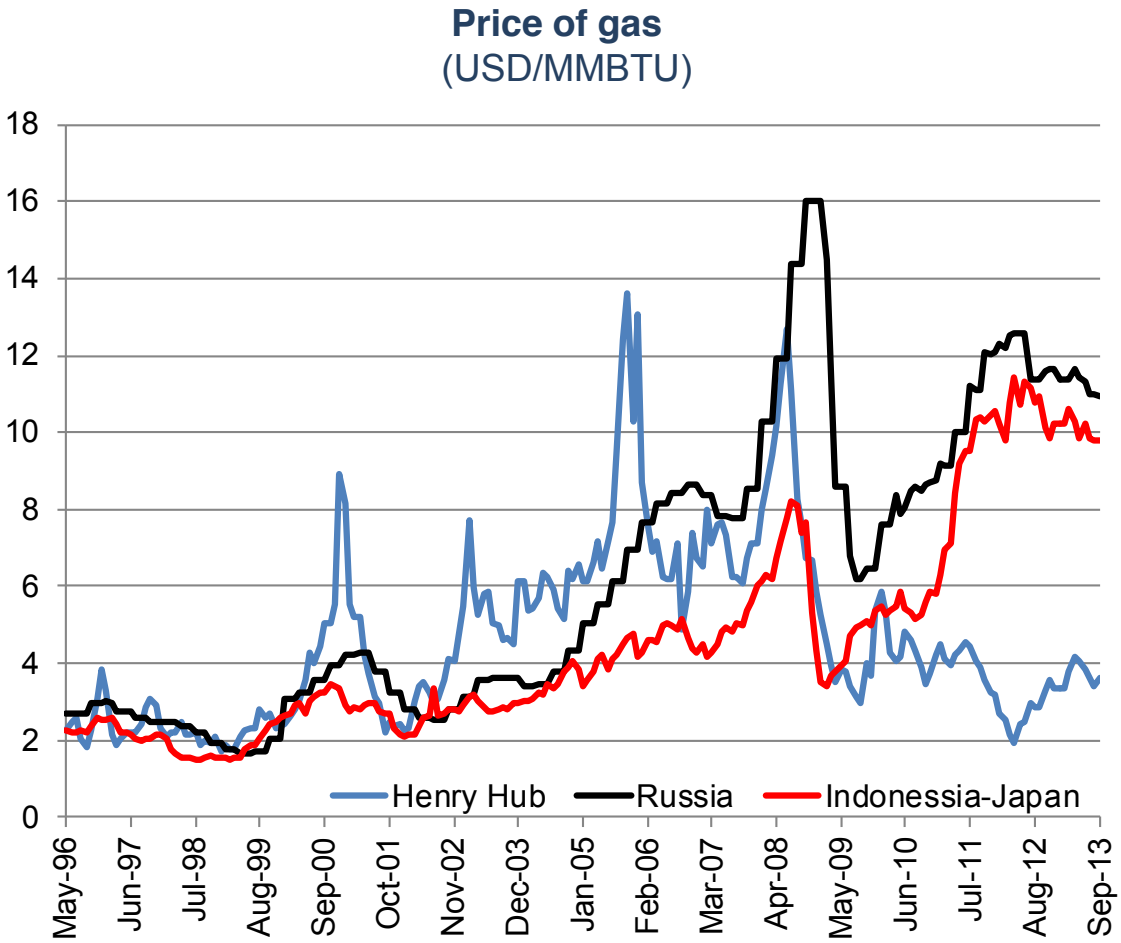


Labor force, from 15 to 64 years
(accumulated annual change)



Source: SAI Law & Economics with data from U.S. Census Bureau and National Bureau of Statistics of China.

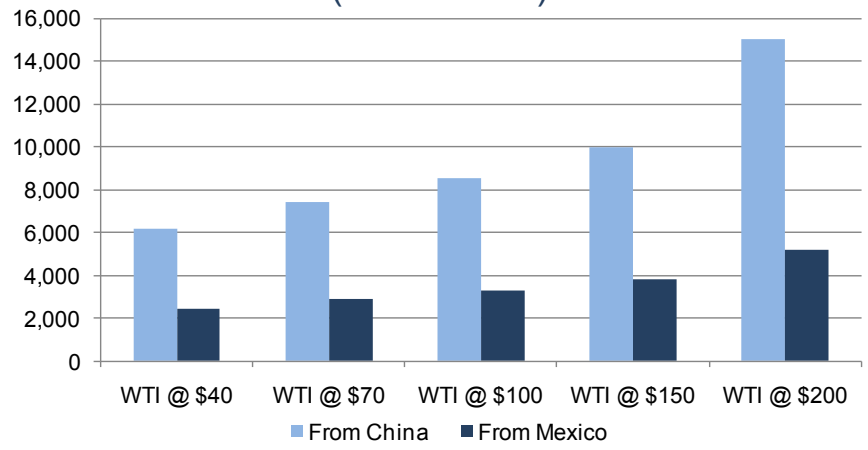
D. Future:
North American Competitiveness – Gas



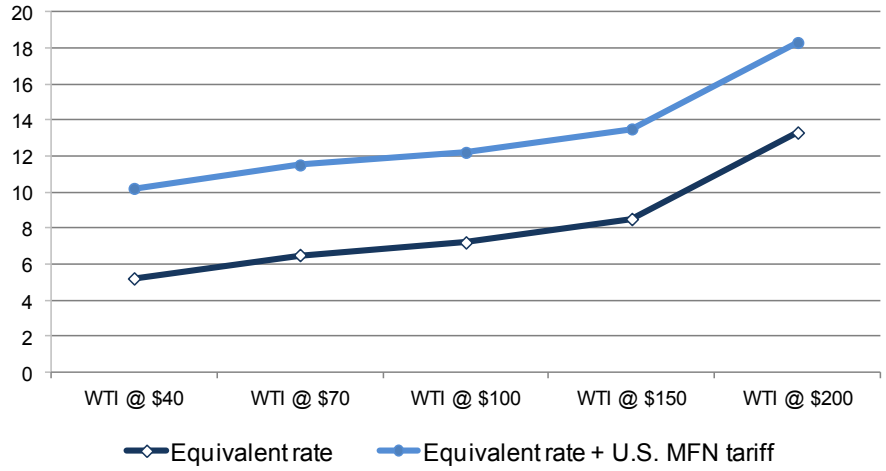
Source: SAI Law & Economics with data from FMI.

D. Future: North American competitiveness – Transportation

Cost of transporting a 40' container to the U.S. east coast
(U.S. dollars)

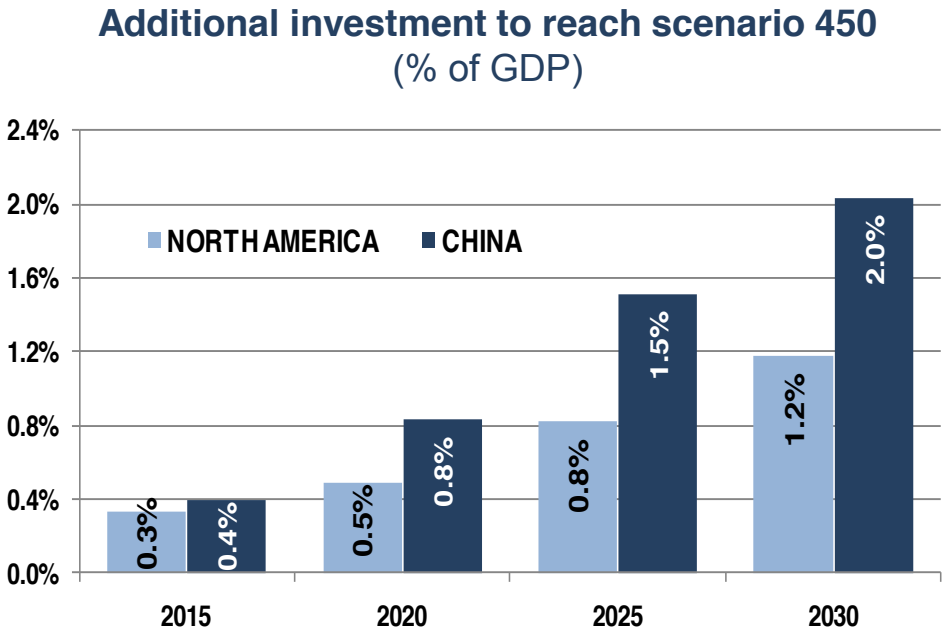


Equivalent tariff
(percentage)



Source: SAI Law & Economics with data from Rubin, Jeff and Benjamin Tal, "Will Soaring Transport Costs Reverse Globalization?".

D. Future: North American competitiveness – Environment



The 450 scenario analyzes different measures to bring energy related CO2 emissions down to a trajectory that would be consistent with ultimately stabilizing the concentration of all greenhouse gases in the atmosphere at 450 particles per million.

Source: SAI Law & Economics with data from The International Energy Agency.

D. Future:
Dual agenda – Intra-regional affairs

Intra-regional
Market access Dumping + ITEC[1] vs. Common competition policy (Chapter 15)
Seamless borders & Transportation North America Logistics Program
Energy synergies North America Energy Program
Labor mobility vs. migration North America Labor Agreement

2012 Dependency ratio

Country	Ratio[2]
Mexico	10.06
US	19.76
Canada	23.17
NAFTA	17.66

2030e/ Dependency ratio

Country	Ratio[2]
Mexico	17.45
US	32.10
Canada	41.40
NAFTA	28.85

Dependency ratios
- 2012: NAFTA 11% smaller than US
- 2030e: NAFTA 10% smaller than US

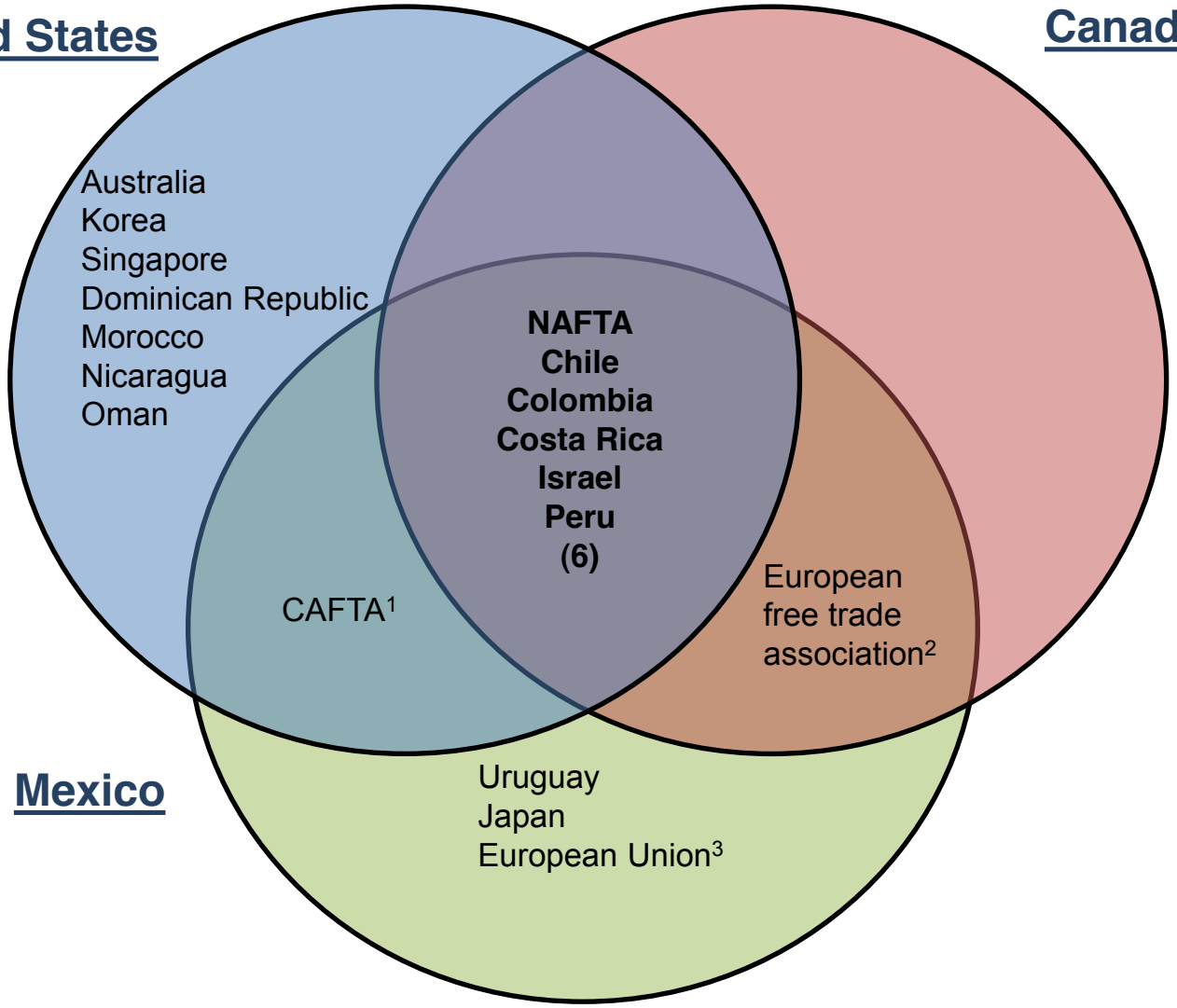
1/ Interagency Trade Enforcement Center.
2/ 64+ age population/ labor force population (15-64 age).
e/ Estimated.
Source: SAI Law & Economics with data from U.S. Census Bureau and National Bureau of Statistics of China..

D. Future:
Dual agenda – Extra-regional affairs

Extra-regional
TPP NAFTA preservation for North America's trade and investment flows.
TTIP Regional negotiation v.s. Convergence
Customs Union NAFTA ⟶ CUNA?

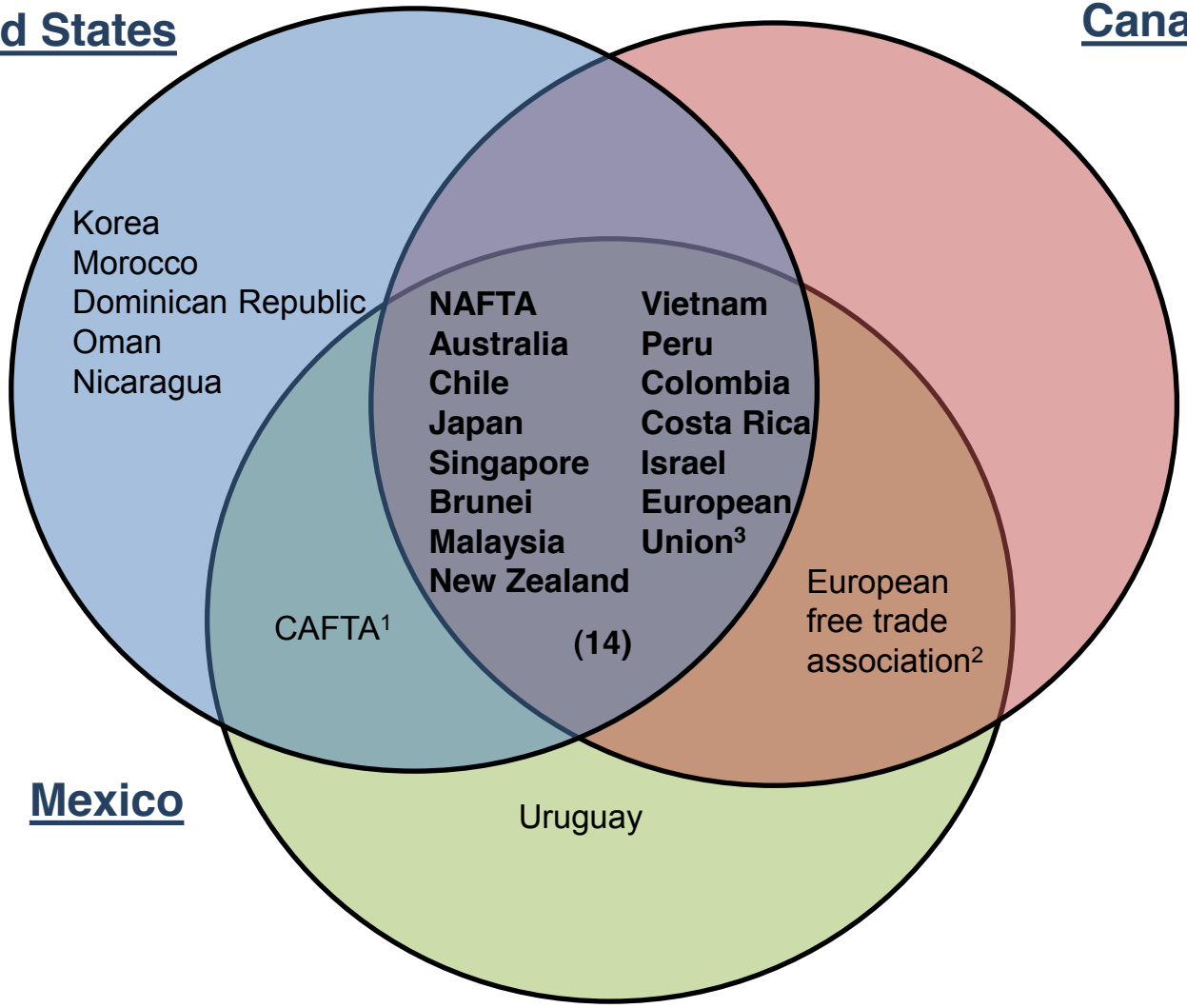
1/ Interagency Trade Enforcement Center.
2/ 64+ age population/ labor force population (15-64 age).
e/ Estimated.
Source: SAI Law & Economics with data from U.S. Census Bureau and National Bureau of Statistics of China..

D. Future: Dual agenda – Current FTAs



1/ Costa Rica, El Salvador, Guatemala, Honduras, & Nicaragua
2/ Iceland, Liechtenstein, Switzerland, & Norway
3/ 28 countries
Source: European Comission; Foreign trade information system Organization of American States; Secretaría de Economía; United States Trade Representative; Department of Foreign Affairs, Trade and Development of Canada.

D. Future:
Dual agenda – Potential FTAs (TPP and TTIP)



1/ Costa Rica, El Salvador, Guatemala, Honduras, & Nicaragua
2/ Iceland, Liechtenstein, Switzerland, & Norway
3/ 28 countries
Source: European Comission; Foreign trade information system Organization of American States; Secretaría de Economía; United States Trade Representative; Department of Foreign Affairs, Trade and Development of Canada.