

Convergence/Divergence Along the North American Borders: Are We There Yet?

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Mexican Development Strategy

Mexico has undergone one of the deepest transformations in economic policy in recent years in the world.

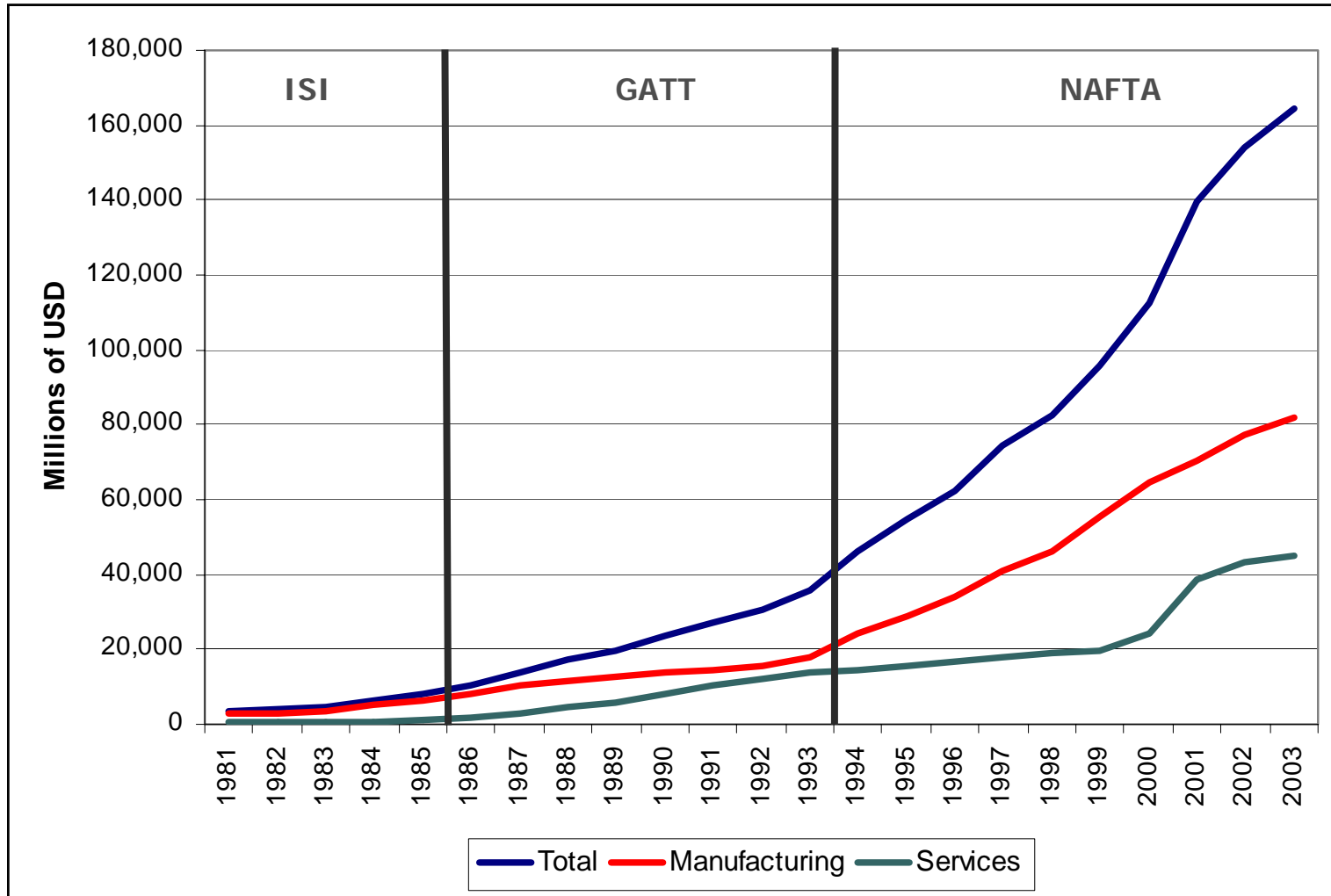
Economic stages

- Until 1985: Import substitution system (although increasingly based on oil exports since the late 1970s)
- From 1985 to 1994: Accession to GATT
- Since 1994: Membership of NAFTA

This process has resulted in a radical opening of the Mexican economy to trade and foreign direct investment

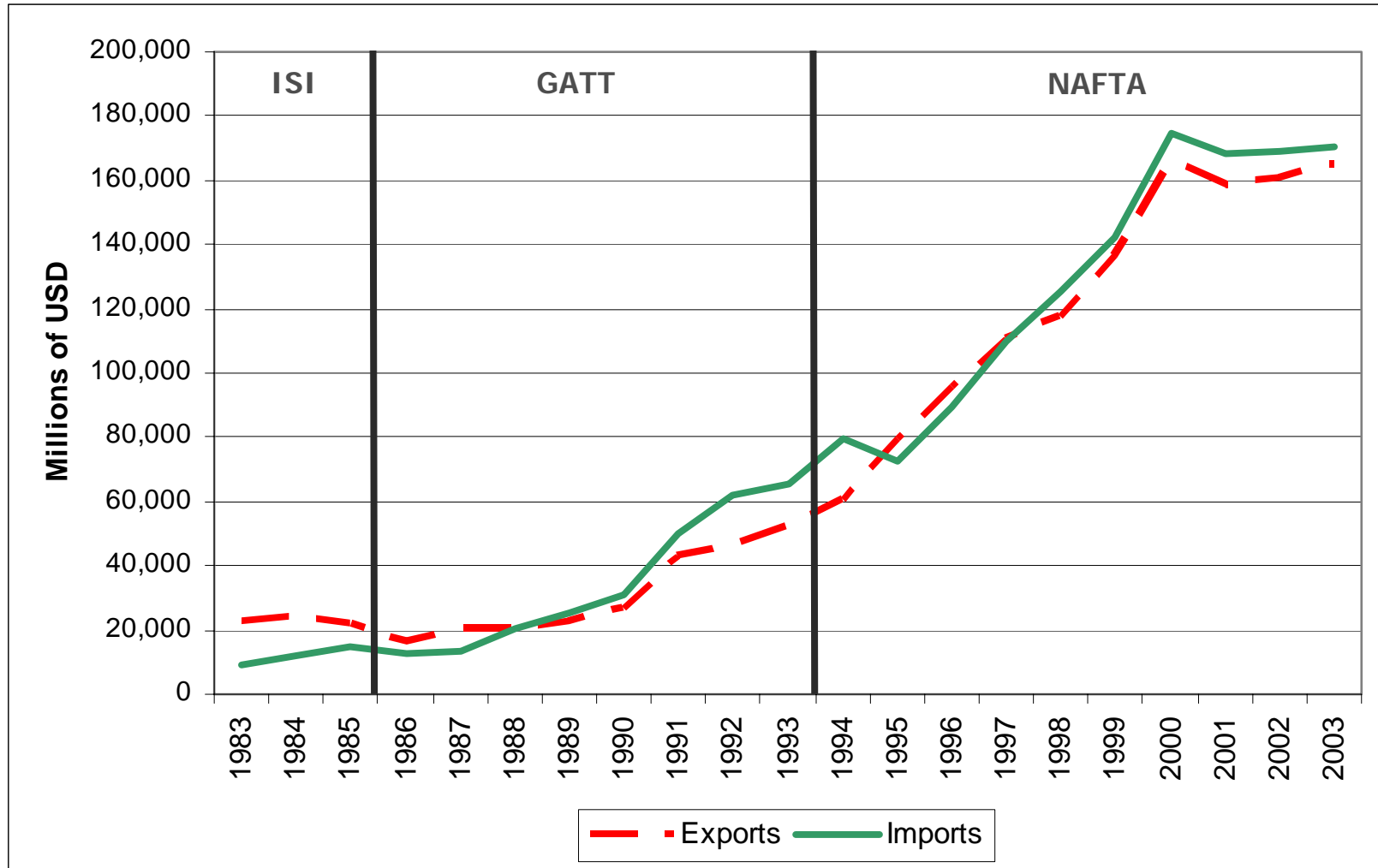


Trade Policy and FDI



Source: INEGI

Trade Flows



Source: INEGI

Spatial consequences of ISI

- Concentration of economic activity in the Centre (Mexico City), Jalisco and border-states (chiefly Monterrey, NL)
- Economic backwardness in the South and northern non-border states, but...
 - Economic convergence between 1970 and 1985
 - Growth rates in some lagging Mexican states (Tlaxcala, Oaxaca, Chiapas) more than doubled those of DF, Nuevo León, or Baja California.

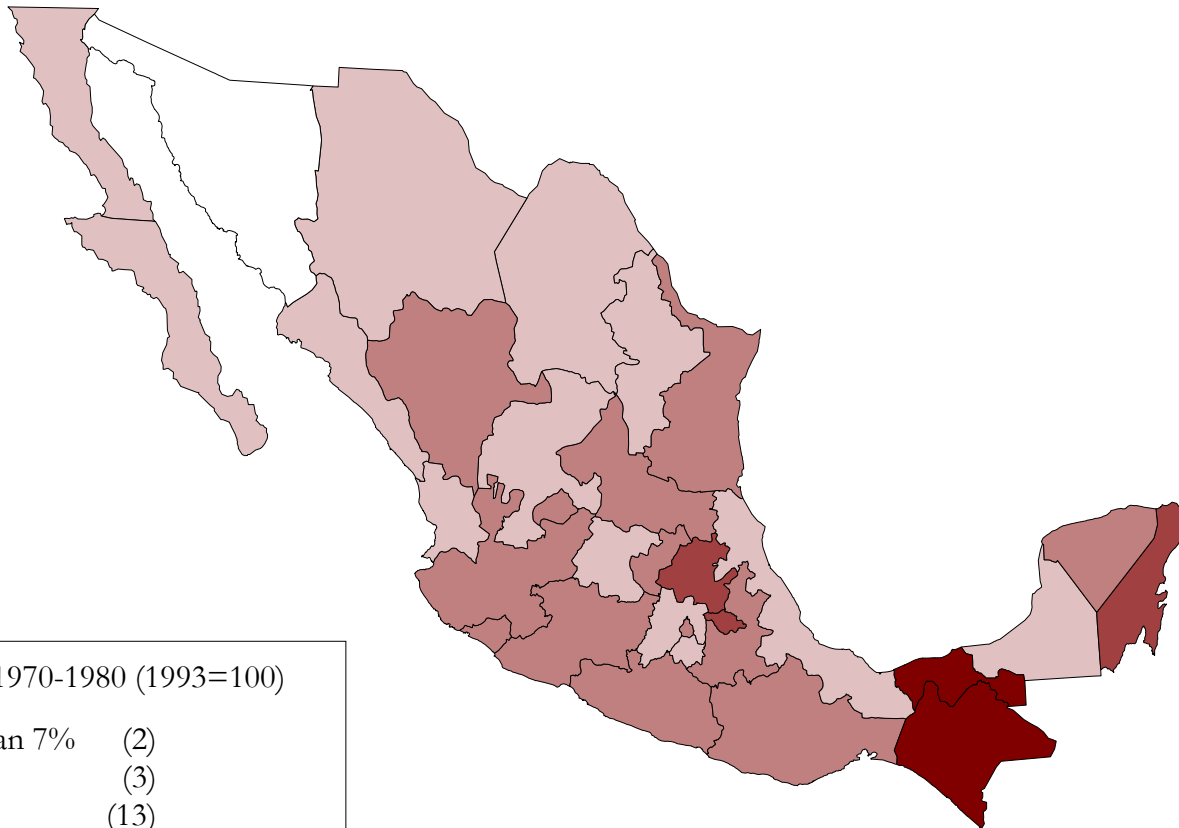


Spatial consequences of ISI



Spatial consequences of ISI

Figure 4.5: Per Capita GDP Growth During ISI

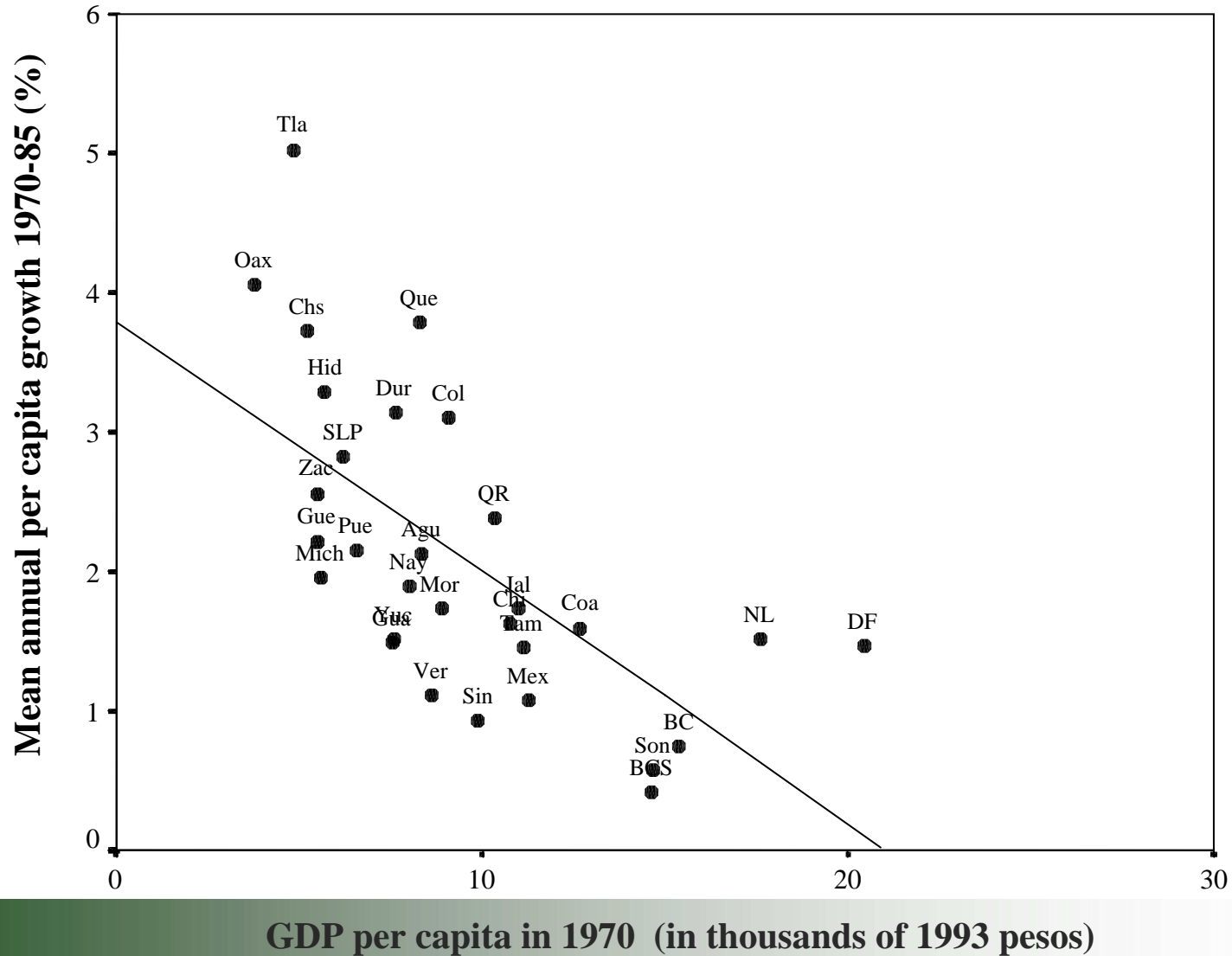


Average Annual Rates 1970-1980 (1993=100)

- more than 7% (2)
- 5 to 7% (3)
- 3 to 5% (13)
- 1 to 3% (13)
- less than 1% (1)



Spatial consequences of ISI

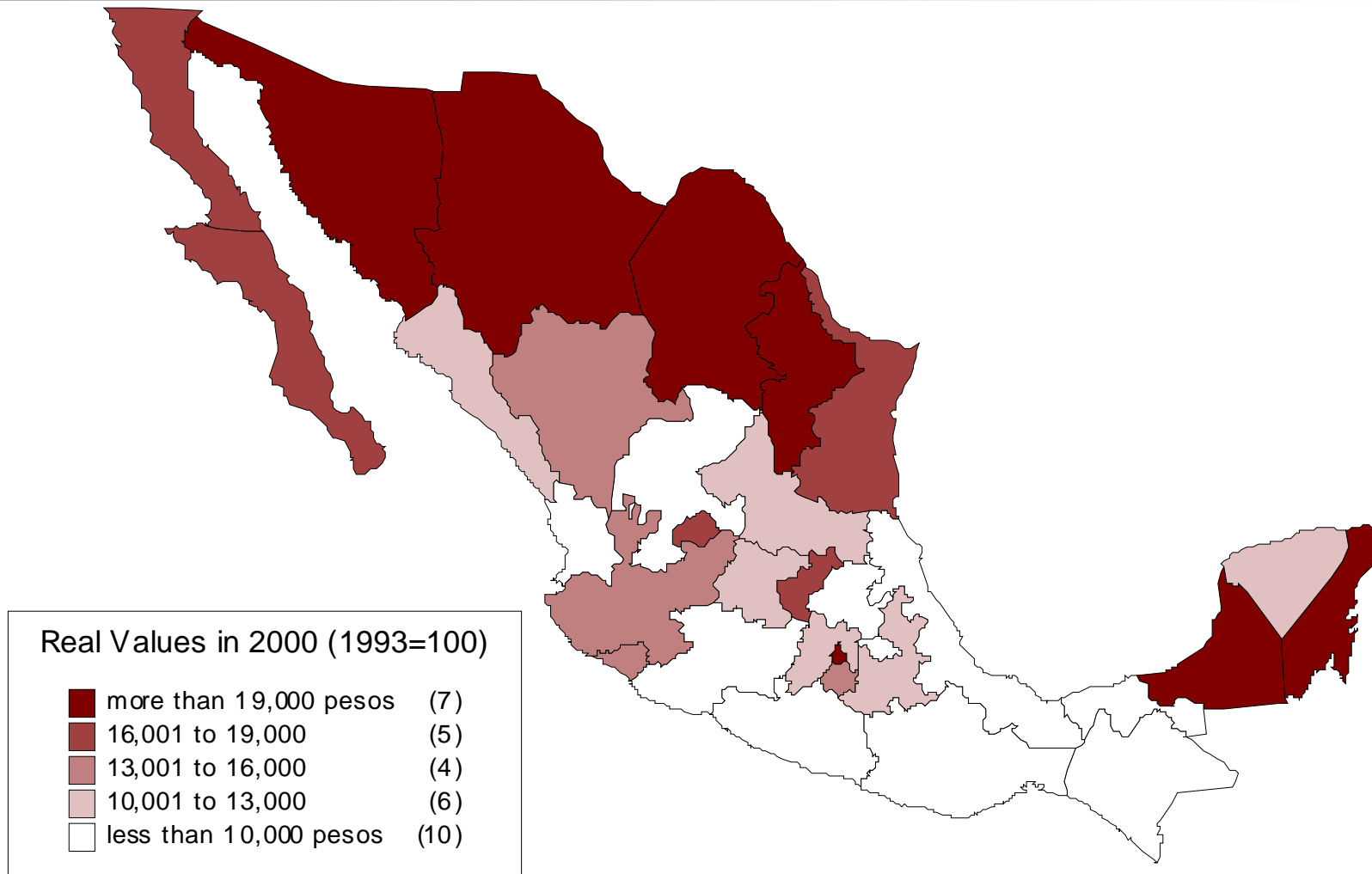


Spatial consequences of trade liberalisation

- Switch from economic convergence to economic divergence
- High growth in northern border-states and high influx of FDI to those states.
- Low growth in the South (specially in Chiapas, Nayarit, Veracruz, and Oaxaca).
- South of Mexico City, only Puebla, Quintana Roo and Yucatán grew above national average

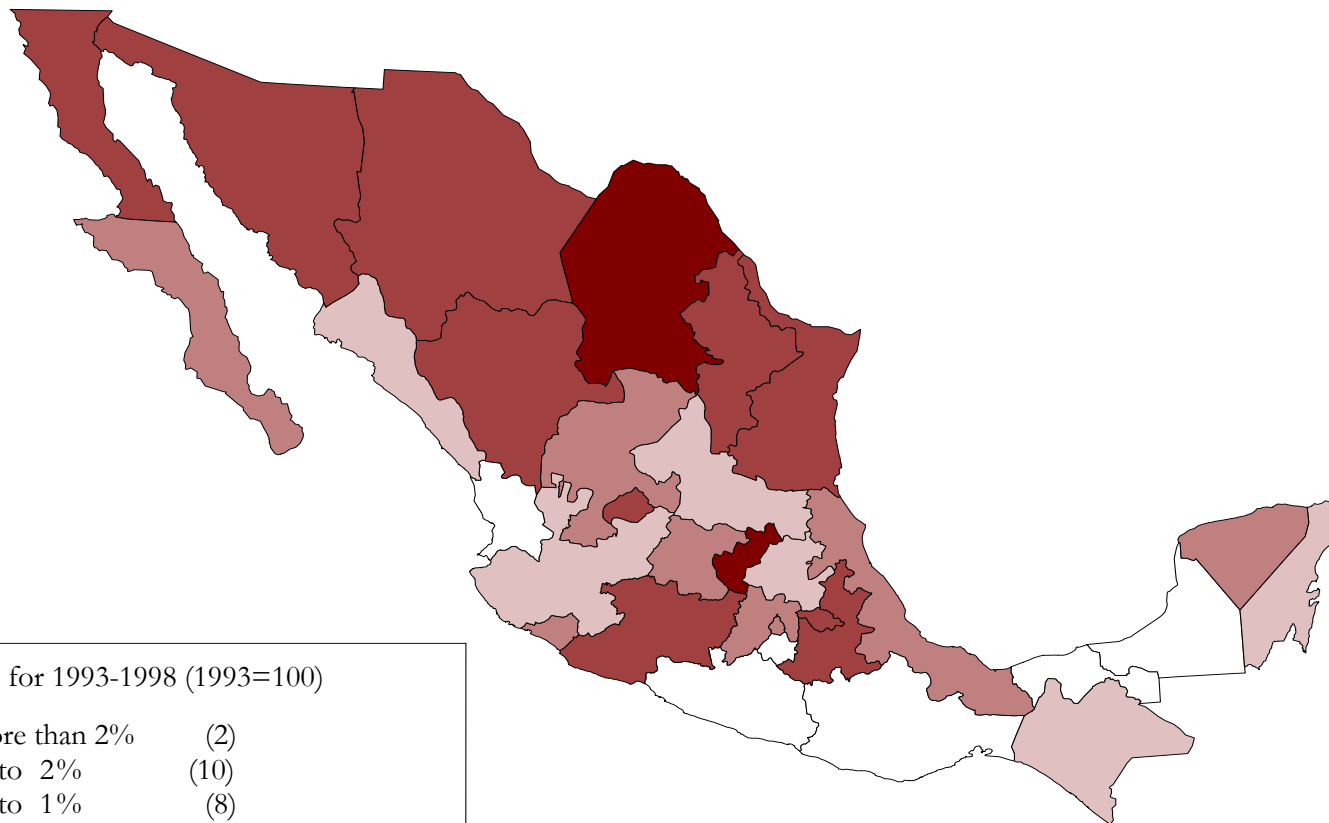


Spatial consequences of trade liberalisation



Spatial consequences of trade liberalisation

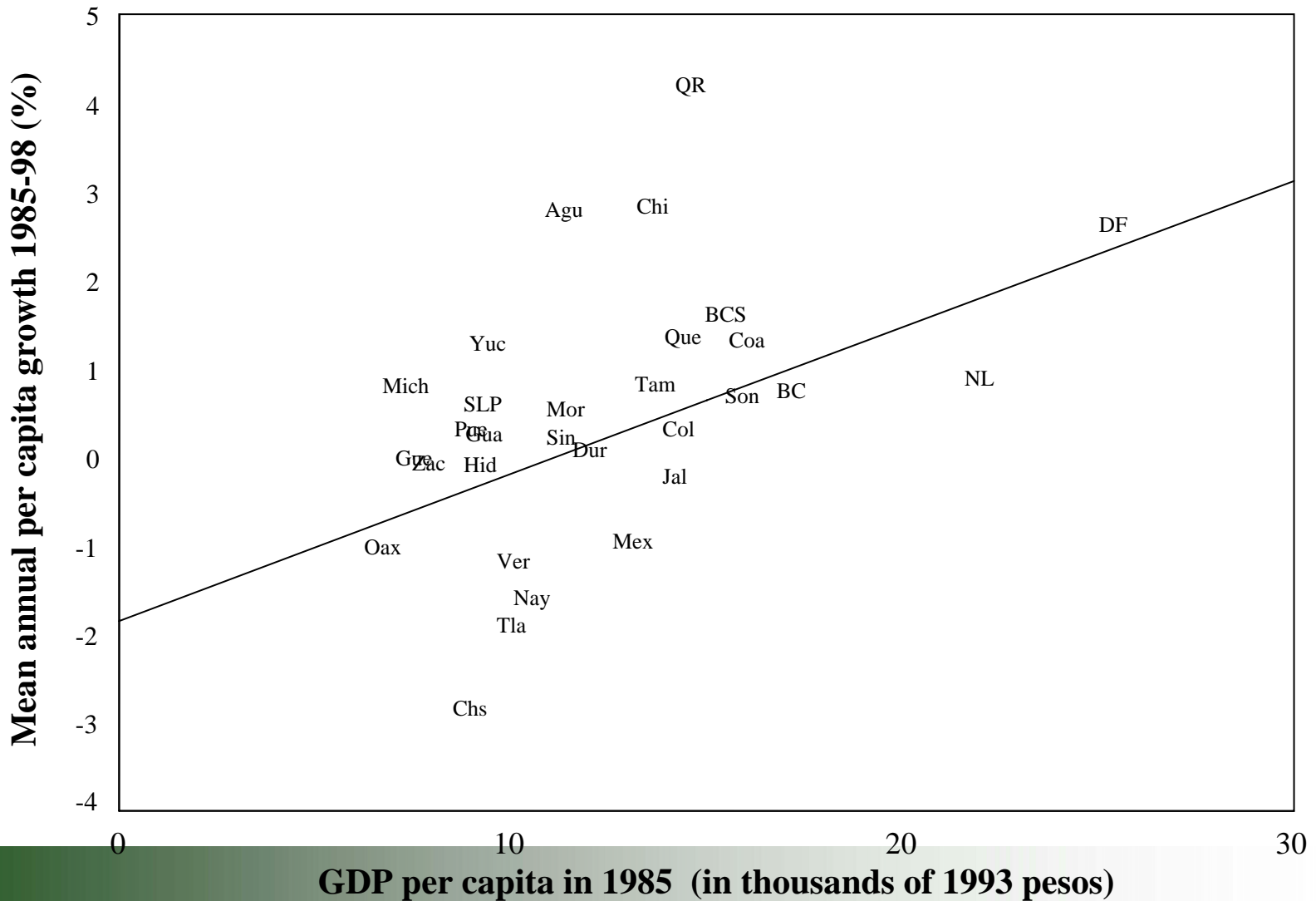
Figure 4.7: Per Capita GDP Growth Under NAFTA



Average Annual Rates for 1993-1998 (1993=100)

■ more than 2%	(2)
■ 1 to 2%	(10)
■ 0 to 1%	(8)
■ -1 to 0%	(6)
□ less than -1%	(6)

Spatial consequences of trade liberalisation



Spatial consequences of trade liberalisation

Table 4.12: σ convergence across states

Standard Deviation	1970	1985	1993	2000
Full Sample	0.3976	0.4733	0.4285	0.4397
Excluding Campeche and Tabasco	0.4105	0.3149	0.4178	0.4374
Excluding Border-States	0.3607	0.5053	0.4283	0.4273
Excluding Campeche and Tabasco & Border-States	0.3751	0.2931	0.4153	0.4201

Spatial consequences of trade liberalisation

β -Convergence Analysis

	Period	B	Adj. R square	Observations
Full Sample	ISI 70-85	-0.292 (-1.674)	0.055	32
	ISI 80-85	-0.279 (-1.589)	0.047	32
	GATT	-0.029 (-0.159)	-0.032	32
	NAFTA	0.097 (0.536)	-0.024	32
Excluding oil-producing states	ISI 70-85	-0.720 (-5.484)	0.501	30
	ISI 80-85	-0.512 (-3.153)	0.236	30
	GATT	0.328 (1.836)	0.076	30
	NAFTA	0.173 (0.928)	-0.005	30

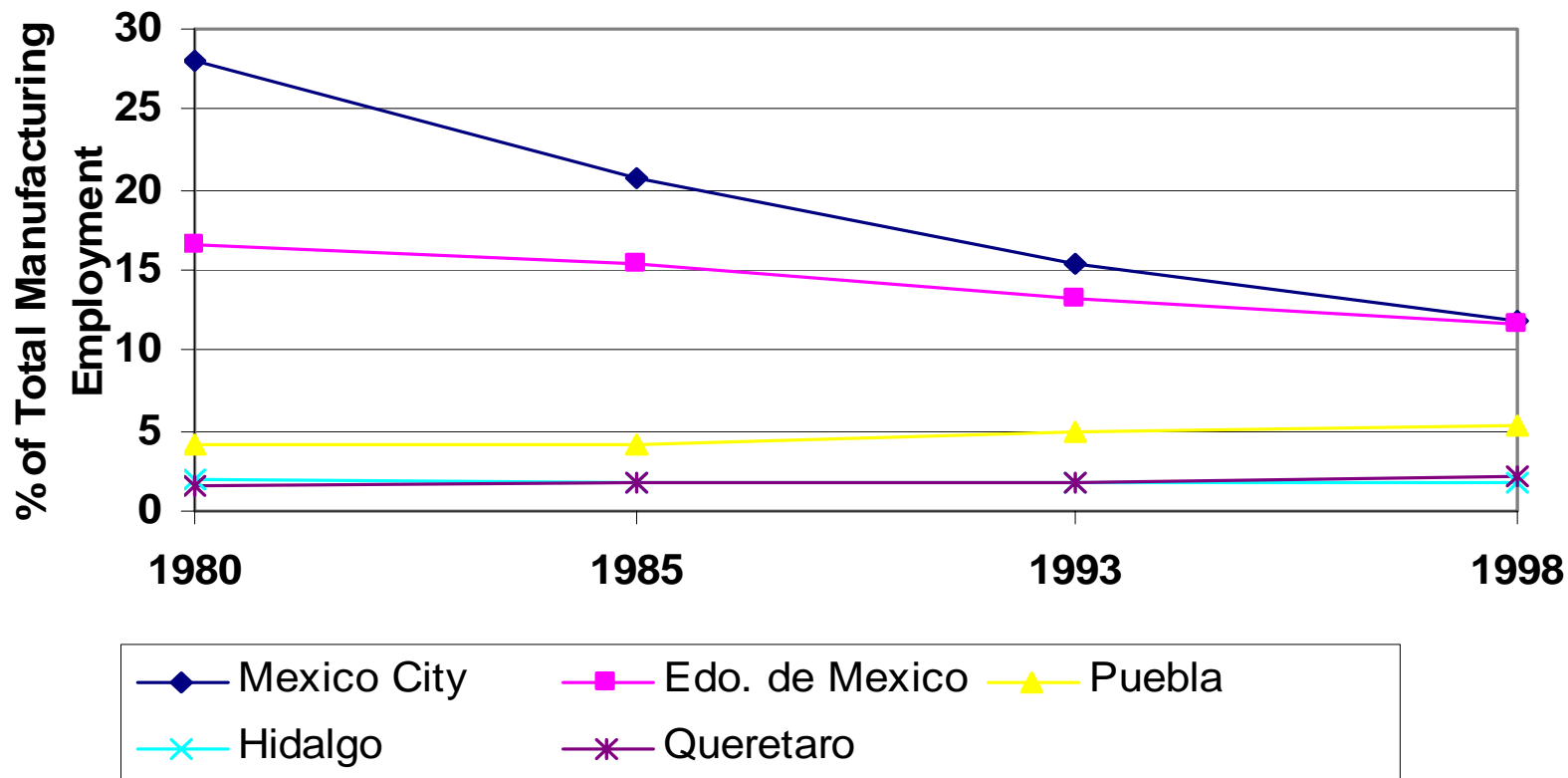
Spatial consequences of trade liberalisation

β -Convergence Analysis

Excluding border-states	ISI 70-85	-0.185 (-0.925)	-0.006	26
	ISI 80-85	-0.265 (-1.349)	0.032	26
	GATT	-0.098 (-0.481)	-0.032	26
	NAFTA	-0.104 (-0.514)	-0.03	26
Excluding oil-producing states and border-states	ISI 70-85	-0.665 (-4.179)	0.417	24
	ISI 80-85	-0.531 (-2.941)	0.250	24
	GATT	0.362 (1.820)	0.091	24
	NAFTA	-0.028 (-0.130)	-0.045	24

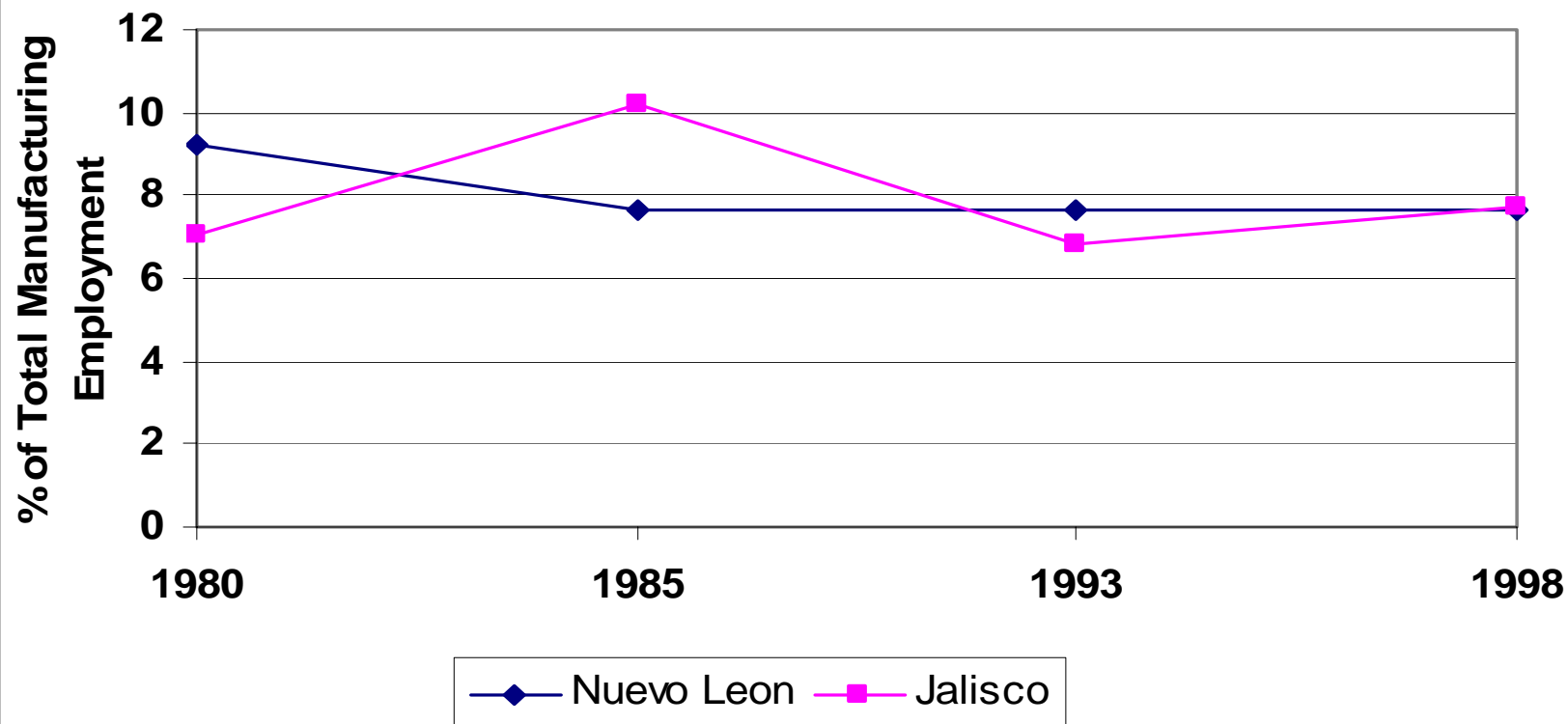
Industrial Concentration & Specialisation

Chart 1: Changes in Industrial Concentration in the Old Manufacturing Belt



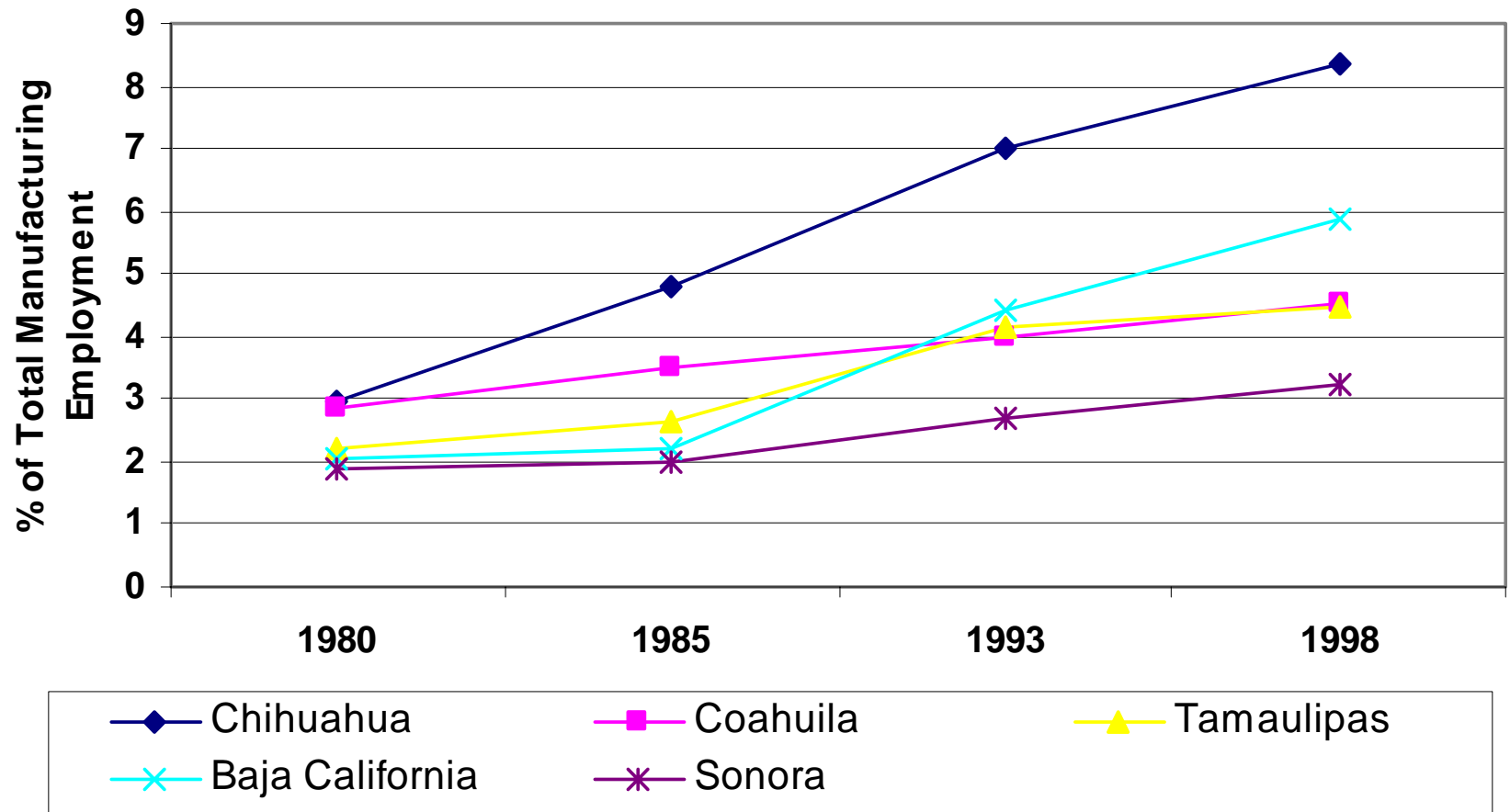
Industrial Concentration & Specialisation

Chart 2: Changes in Industrial Concentration in the Two Alternative Agglomerations



Industrial Concentration & Specialisation

Chart 3: Industrial Concentration in Border-States



Industrial Concentration & Specialisation

$$\log \left(\frac{\frac{Q_{ikt}}{Q_{jt}}}{\frac{Q_{ik0}}{Q_{j0}}} \right) = f \left(\log L_{ij0}, \log K_{ij0}, \log \text{dismex}, \log \text{disusa}, \text{Jac}, \text{MAR} \right)$$

where:

i = state

j = 2-digit industry

k = 4-digit industry

l = 4-digit industry \neq k

t = period of time

Q = gross industrial production

L = labour

K = capital

dismex = distance in kilometres from the capital of the state to Mexico City

disusa = distance in kilometres from the capital of the state to the nearest border city with the USA

Jac = Jacobs externalities

MAR = MAR externalities



Industrial Concentration & Specialisation

$$MAR = \frac{\left(\frac{Likt}{Li\ 0} \right)}{\left(\frac{Lkt}{L\ 0} \right)}$$

$$Jac = \frac{\frac{1}{\sum \left(\frac{Lil}{Li - Lik} \right)^2}}{\frac{1}{\sum \left(\frac{Ll}{L - Lk} \right)^2}}$$



Industrial Concentration & Specialisation

Table 2. Results for All Periods

	B	t
L	-0.009	-0.530
K	-0.019	-2.510*
dismex	0.041	2.310*
disusa	0.006	0.400
Jac	34.840	2.470*
MAR	0.135	6.000*
R square		0.0149
Observations		5184

*/ Significant at 95%

- Using the entire sample yields results that are not in line with neo-classical theory, nor with the NEG.
- However, both types of externalities are related to agglomeration.



Industrial Concentration & Specialisation

Table 3. Results for ISI

	B	t
L	-0.110	-1.100
K	-0.067	-0.770
dismex	0.048	0.023
disusa	-0.033	-0.740
Jac	41.574	0.320
MAR	0.462	7.520*
R square		0.038
Observations		1728

* / Significant at 95%

- During ISI, again none of the theories are related to agglomeration.
- Specialisation is responsible for concentration since there was a single dominant industrial hub that concentrated all industries.
- However, diversity –which should be related- is not.



Industrial Concentration & Specialisation

Table 5. Results for NAFTA

	B	t
L	-0.426	-13.300*
K	0.060	3.030*
dismex	-0.028	-2.930*
disusa	-0.013	-1.430
Jac	-13.130	-0.090
MAR	0.139	8.570*
R square		0.0767
Observations		1728

*/ Significant

- During NAFTA, the results seem to be in line only with neo-classical theory – with freer trade- expectations, but not with NEG.
- However, specialisation emerges as the source of agglomeration economies as many industrial clusters start to appear particularly in northern Mexico.

- There isn't a clear answer to whether neo-classical theory or NEG reflect trade and concentration in Mexico. However, as freer trade takes place with NAFTA, neo-classical theory makes more sense.
- Results for NEG are unplausible and probably related to the way in which proximity is included in the model.
- Although specialisation somewhat follows the expected trend, diversity doesn't seem to play a role even during a quasi mono-centric industrial model entailed by ISI in and around Mexico City.
- It is important to test other proxies for proximity and possibly the dependent to reflect concentration patterns.
- Overall, a story that makes sense regarding trade policy and specialisation, but unfortunately one unclear about NEG.