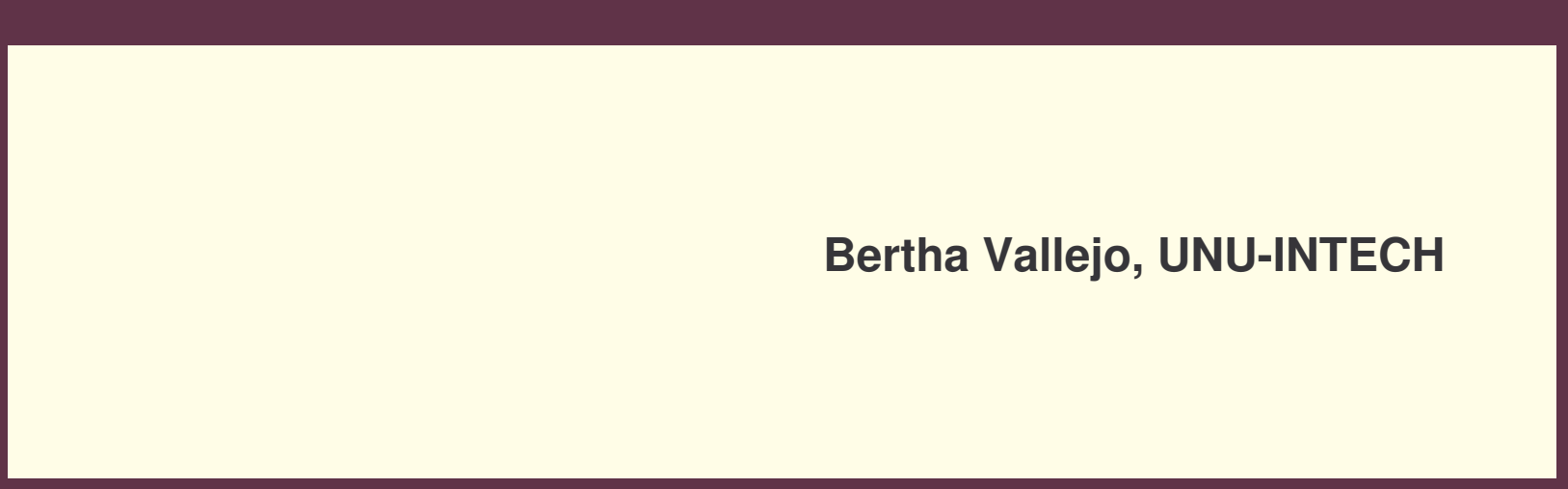




Technological Competences in Supporting
Industrial Firms: The Autoparts Sector in
Mexico



Bertha Vallejo, UNU-INTECH

Objective of this presentation:

- Bird-view of main organizational and learning changes in the automotive industry in Mexico before and after NAFTA
- Foreseeing the implication of these technological capabilities accumulation in changing to another paradigm or technological trajectory.

Relevance in the National Economy

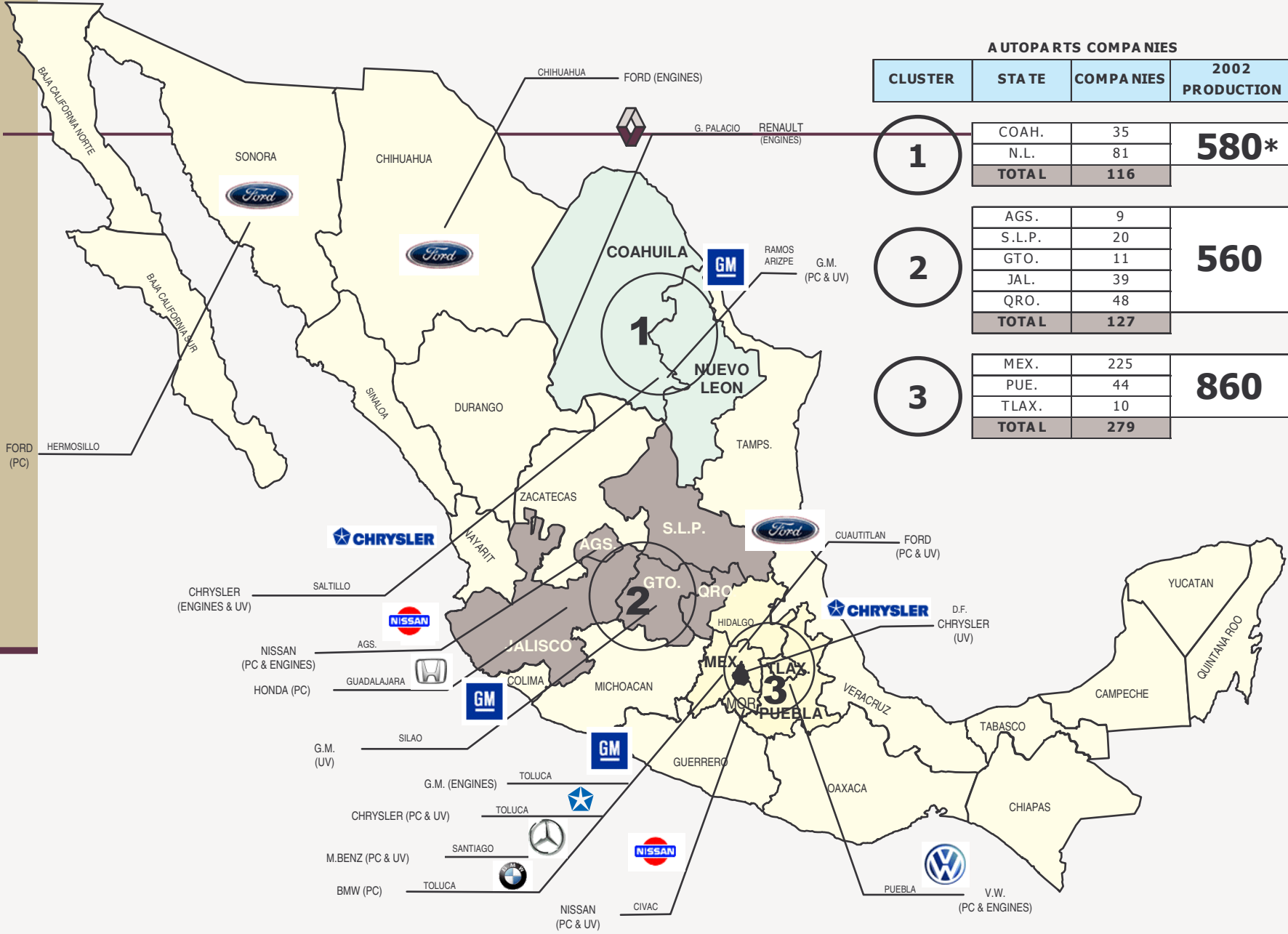
- The automobile industry
 - More than 3% of the GDP
 - Second exporting sector in the country
 - Important exporter of engines
 - Second largest source of employment

Contextual Introduction

MEXICO

- Import Substitution Industrialization
 - Automotive Sector – The exception
- Trade Liberalization
- NAFTA → Entrance in 1994
 - De-regulation of the industry
 - Ownership requirements
 - Local content requirements
 - Homogenization of the industry

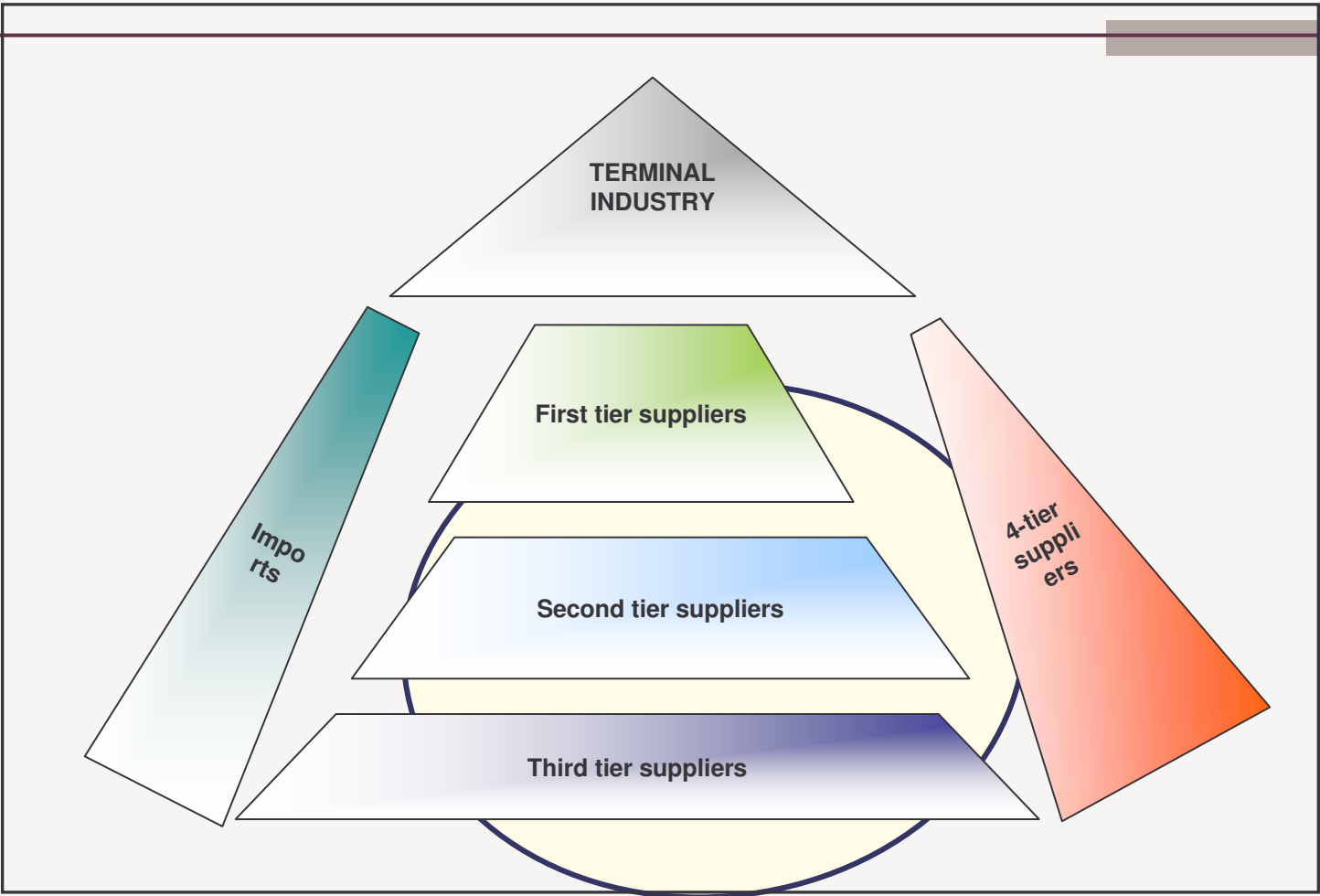
AUTOMOTIVE INDUSTRY LOCATION



A UTOPARTS COMPANIES

CLUSTER	STATE	COMPANIES	2002 PRODUCTION
1	COAH.	35	580*
	N.L.	81	
	TOTAL	116	
2	AGS.	9	560
	S.L.P.	20	
	GTO.	11	
	JAL.	39	
	QRO.	48	
TOTAL	127		
3	MEX.	225	860
	PUE.	44	
	TLAX.	10	
	TOTAL	279	

Automotive Industry Structure



Results (1)...

- R&D is conducted in isolation to other kinds of learning mechanisms.
- The acquisition of new machinery and equipment is complemented with the acquisition of technology packages and transfers from firms' headquarters.
- Training is the main source of learning... but...

... Other aspects of the SSI

■ Linkages with Universities

	1991	1998	2000
Training	8%	9%	10%
R&D	1%	0.5%	0.5%

Results (2) ...

Organizational Changes (% of firms)

	1991	1998	2000
JIT	8%	34%	30%
SPC	18%	58%	59%
QCF	7%	47%	50%
TCQ	11%	59%	59%

Results (3) ...

Adoption of Mechatronics (% of firms)

	1991	1998	2000
NCMT	33%	40%	45%
CMT	34%	46%	47%
Robots	11%	13%	15%

TECHNOLOGY COMPLEXITY

DESCRIPTION	1	2	3	4
TECHNOLOGY LEVEL	<p>HIGH TECHNOLOGY COMPONENTS</p>	<p>MEDIUM - LOW TECHNOLOGY COMPONENTS</p>	<p>BASIC PROCESSES</p>	<p>RAW MATERIALS & TOOLING</p>
COMPONENTS	<ul style="list-style-type: none"> - TRANSMISSION - ELECTRONIC SYSTEMS - STEERING 	<ul style="list-style-type: none"> - SUSPENSION - BRAKES - TRIMMING - A/C SYSTEM - ELECTRIC SYSTEM 	<ul style="list-style-type: none"> - FORGING - CASTING - PLASTICS - STAMPINGS 	<ul style="list-style-type: none"> - MOLDS - TOOLS - PLASTICS - ALUMINUM - SCRAP IRON - STEEL SHEET
REMARKS	MAINLY IMPORTED	INDUSTRY CONCENTRATES IN THIS SEGMENT	HIGH VOLUME IMPORTS ON THESE PROCESSES	WEAKEST SECTOR OF THE CHAIN



- LACK OF DESIGN TECHNOLOGY IN MOSTLY ALL LEVELS
 - PROMOTION EFFORT ORIENTED TO LEVELS 2, 3 & 4

...

-
- Increase of new vehicles taxes

 - 22nd August 2005:
 - Legal approval for the importation and legalization of used cars (10 and 15 years old) from the U.S.
 - These cars are free of tax-payments

Implications...

- Main Technological Capabilities:
 - Locally – operational
 - Internationally – dynamic
 - Weaker post-NAFTA linkages with K-sources
- Poor integration into the supply chain
- Post-NAFTA changes in production strategies
 - Shift towards the after-market sector



...

-
- Poor domestic absorptive capabilities to shift into new technological trajectory...

■ ...



Learning Mechanisms in Industrial Firms and
their Effects on Economic Performance: The
Autoparts Sector in Mexico

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