Innovation and IP Management

Safe Nests in Global Nets

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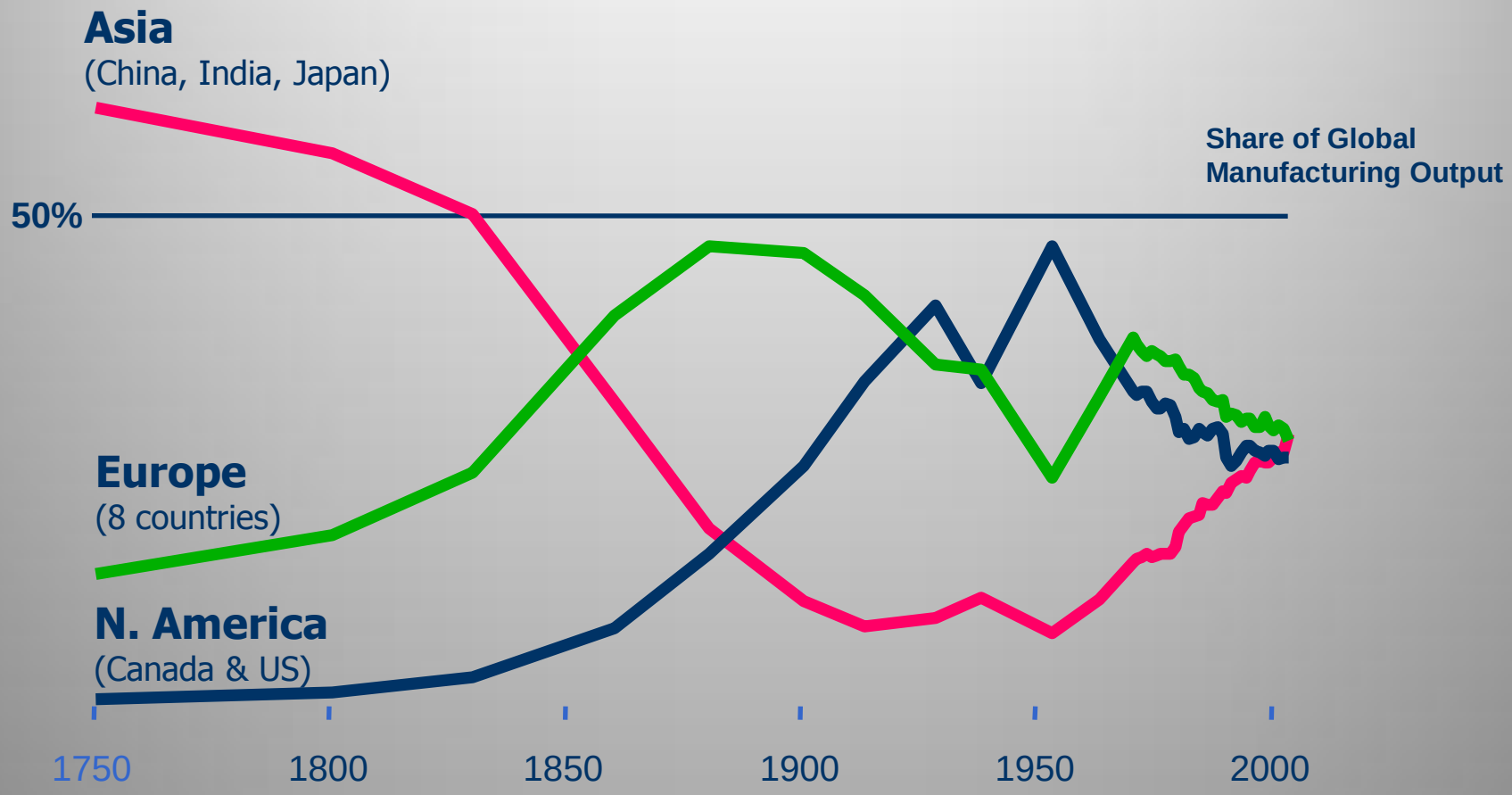
The relevance of IP Management for Open Innovation

- Open Innovation is connected to the concept of Appropriability
- Opening without a clear IP strategy is dangerous
- What do we know about IP Management?
- Investigating large companies
  IP Management is not easy

Changing division of labour in manufacturing…will R&D follow?



Source: Bairoch 1982 (updates: ETLA).

"We expect to see greater internationalization of large firms' technological activities in the future…"

Patel, P & Pavitt, P. 1991. ibid.

…this research project started from here

Empirical analysis:

Research Question

Can we find evidence of "Non Globalization"?

Three drivers of R&D globalization (…based on extant research)

Demand factors

- Adapting R&D, products and processes to local demand
- Providing technological support to off-shored mfg. plants

Supply factors

- Monitoring scientific and technological developments
- Obtaining access to scientists, engineers and designers
- Generating entirely new products and core technologies

'Intermediating factors'

- Facilitating the efficient coupling of demand and supply factors
- Aligning activities with local cultures and norms

Wireless Telecom as an interesting case: all signs of globalization…

Demand factors

- Deregulation and break-up of national monopolies, new regional markets with local players demand and tastes

Supply factors

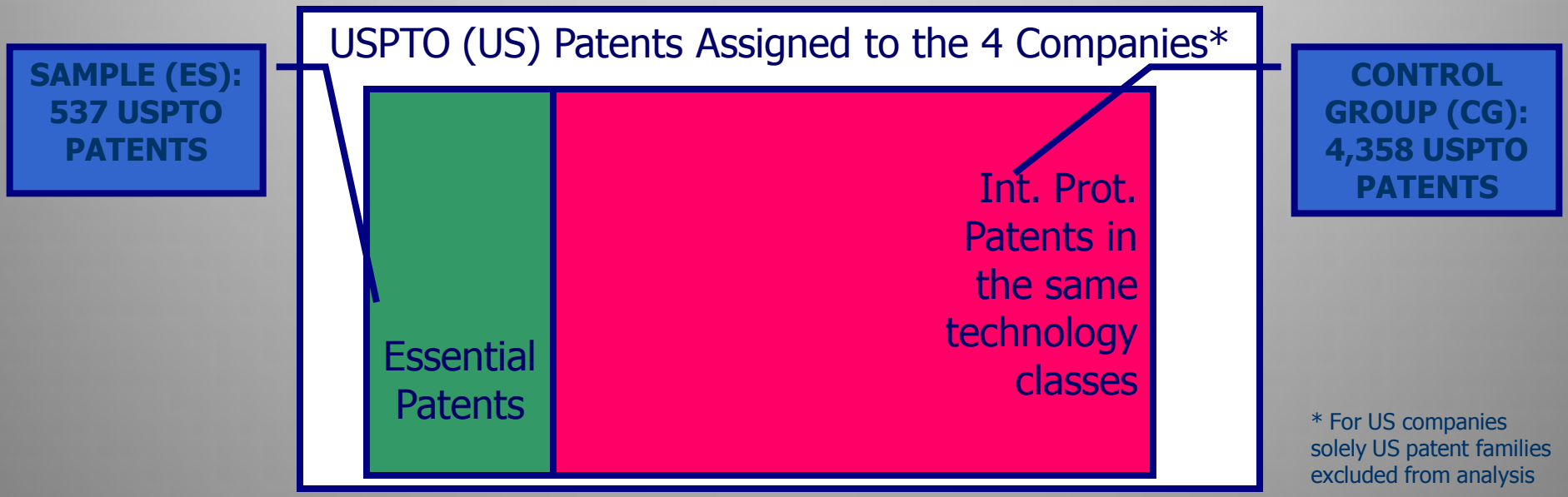
- Technological convergence, emerging/new 'centers of excellence' (Eastern Europe, China, India etc.), supply of both high skilled and low cost engineers

Intermediating factors…?

- Interoperability and modularization, integration of technologies developed worldwide…

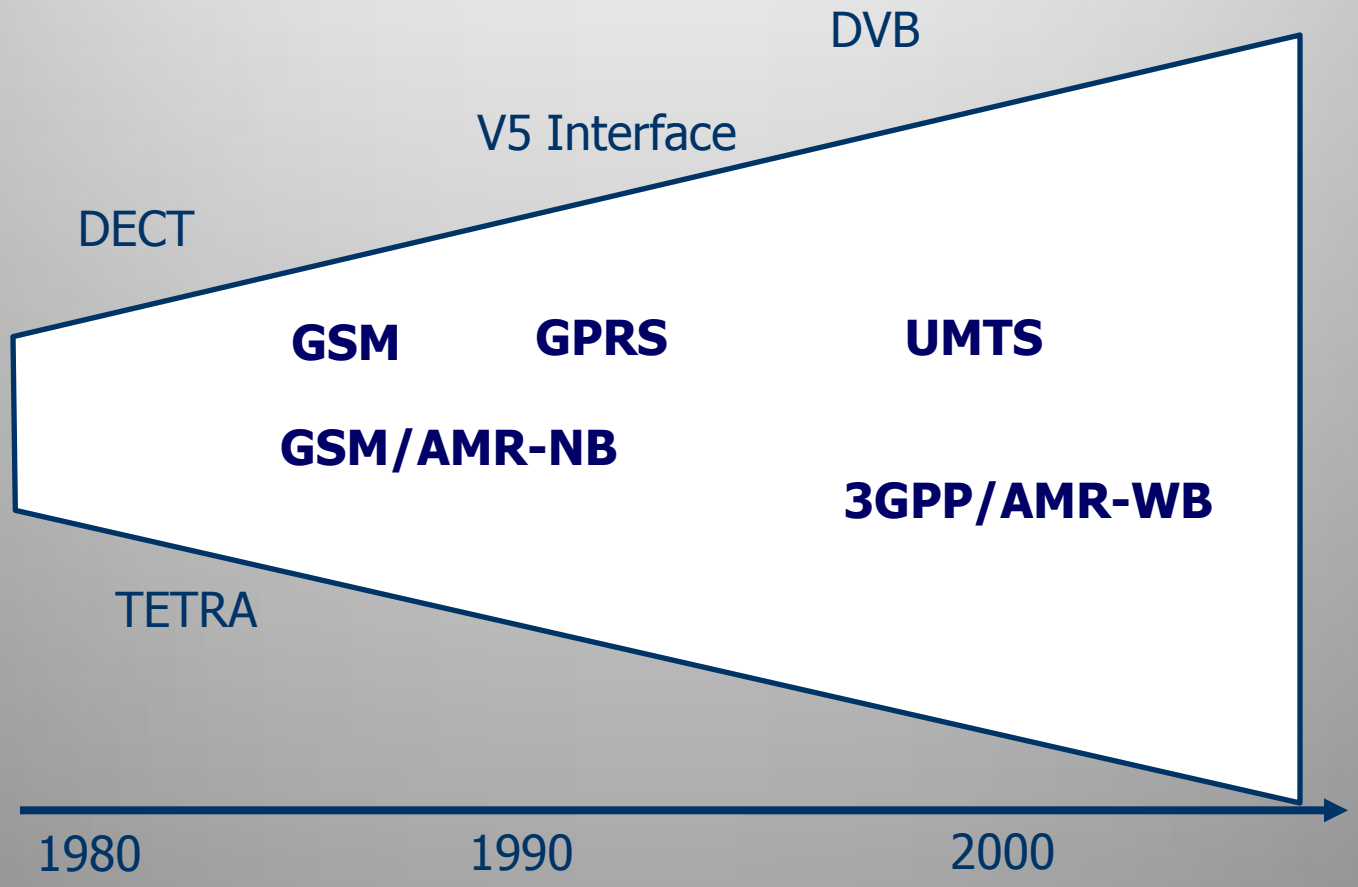
…but also an interesting area for Collaboration and Open Innovation practices!

- Standardization of wireless communication
- ETSI system of notification of patents as an analytical lens to single out 'more significant' inventive activity
- The 4 largest assignees of ETSI "essential" patents:
  - **Ericsson, Qualcomm, Motorola, Nokia:** 64% of all essential patents



* For US companies solely US patent families excluded from analysis

Types of ETSI Standards mainly covered by the empirical analysis



Distribution of patents across the 4 companies

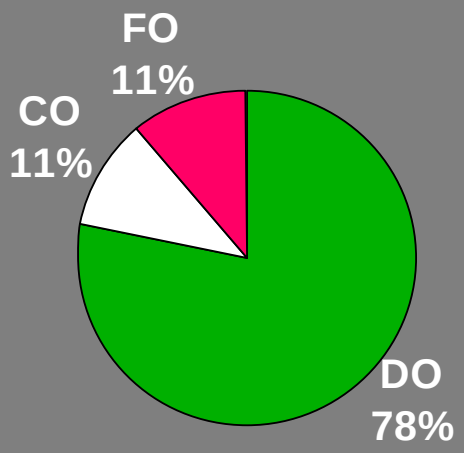
	Total Patents (assigned between 1985-2005)	Ericsson	Nokia	Motorola	Qualcomm
Essential Patents	537	241	72	85	139
Control Group Patents	4 358	1 752	1 012	1 160	434
2Years Fwd Citations / Patents	4.02 (ES)	3.31 (ES)	3.36 (ES)	3.01 (ES)	6.21 (ES)
	2.31 (CG)	2.12 (CG)	2.15 (CG)	2.47 (CG)	3.03 (CG)

Location Analysis

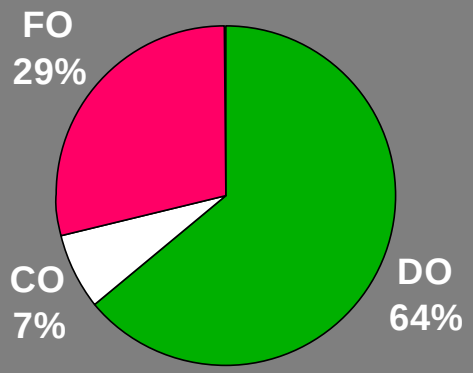
- **DO (Domestic) patents**: all inventors located in H.Q. country
- **CO (International Collaboration) patents**: at least one inventor in H.Q. country and at least one inventor in foreign country
- **FO (Foreign) patents**: all inventors located in foreign countries

FO-CO-DO distribution of patents

Essential Patents



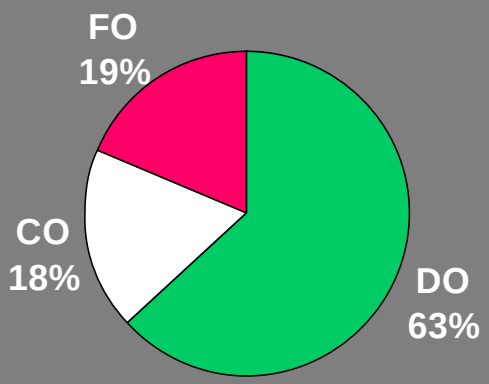
Control Group



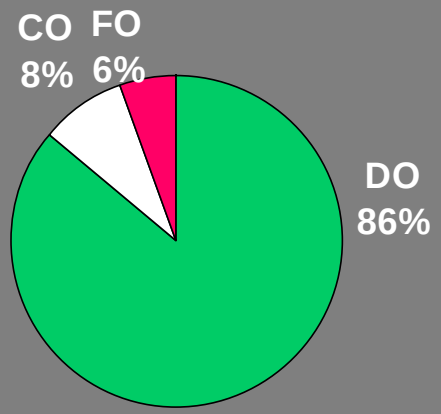
Pearson Chi-Square for DO * Essential : 41.5 (.01 significant)
Pearson Chi-Square for FO * Essential : 77.5 (.01 significant)

Company level

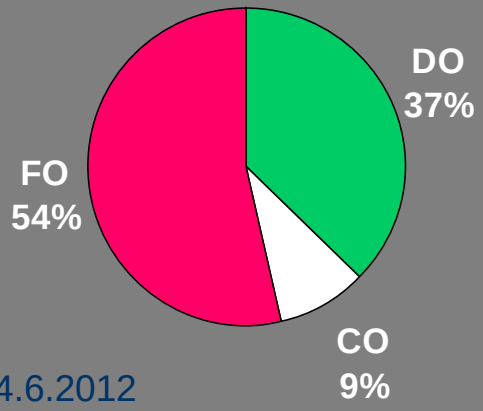
ERICSSON
Essential Patents



NOKIA
Essential Patents

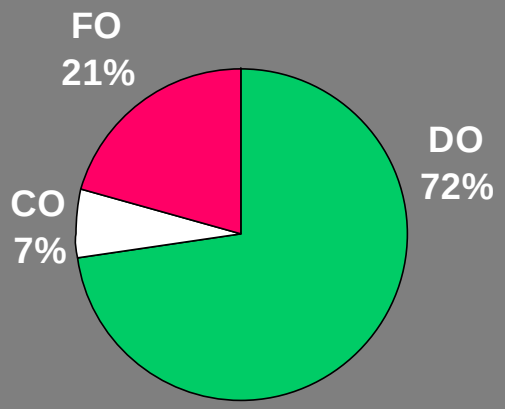


Control Group Patents



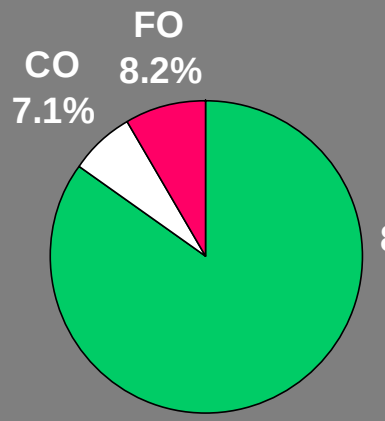
Pearson Chi-Square for DO * Essential : 59.4 (.01 significant)

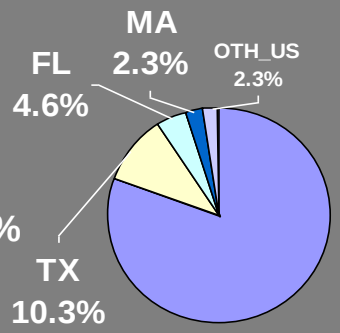
Pearson Chi-Square for DO * Essential : 6.4 (.01 significant)



Company level

MOTOROLA Essential Patents

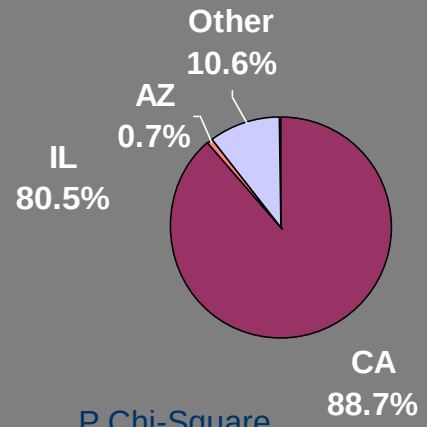


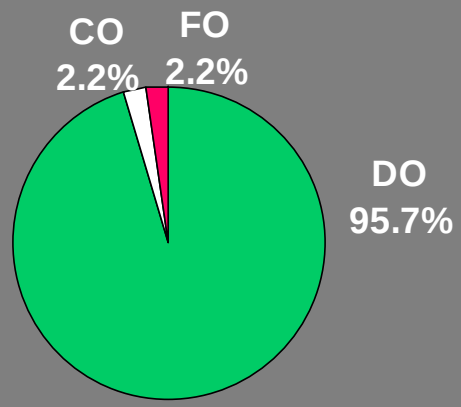


P Chi-Square DO * Essential : N.S. (.01)

P Chi-Square IL_st * Ess : 39.6

QUALCOMM Essential Patents

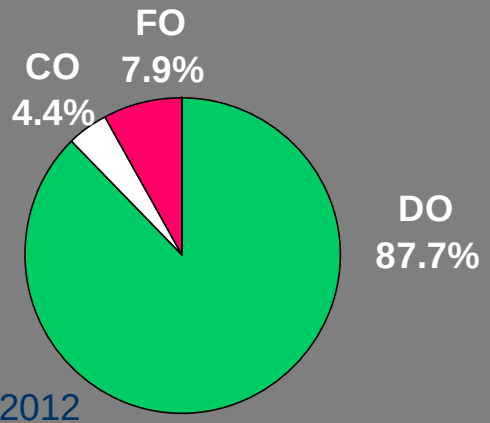


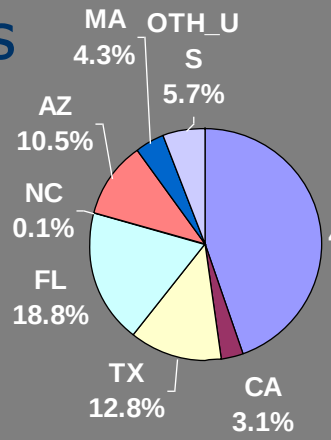


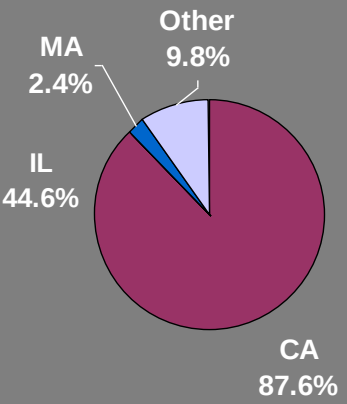
P Chi-Square CA_st * Ess : N.S.

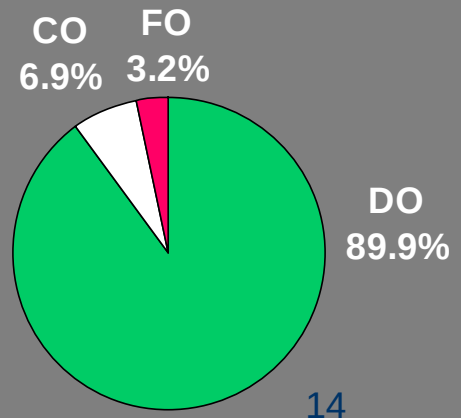
P Chi-Square DO * Essential : 4.48 *

Control Group Patents









Multivariate Analysis

Dependent variable:	All inventors from the headquarter *country* (a)		All inventors from the headquarter *country* (b)		All inventors from the headq. *country/state* (c)		All inventors from the headq. *country/state* (d)	
	W/o Ess. × Firm		With Ess. × Firm		W/o Ess. × Firm		With Ess. × Firm	
	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.	Coeff.	Sig.
An ETSI essential patent	.132	***			.201	***		
An essential patent × Ericsson			.173	***			.221	***
An essential patent × Qualcomm			.063				.027	
An essential patent × Motorola			-.066				.290	***
An essential patent × Nokia			.126	**			.164	**
The patent assignee is Qualcomm	.348	***	.354	***	.361	***	.386	***
The patent assignee is Motorola	.356	***	.368	***	.002		-.004	
The patent assignee is Nokia	.256	***	.262	***	.322	***	.326	***
McFadden's pseudo R2	*.204*		*.206*		*.127*		*.129*	
Count R2	*.761*		*.760*		*.681*		*.680*	

Note: Estimated with Stata 9.2 for Windows.
The reported coefficients are marginal effects for discrete change of the dummy variable in question from 0 to 1.
Control variables are: years dummy, technology classes, number of claims, See the appendix for th complete regression results.
=5% significance and *=1%significance.
Observations: 4,895.

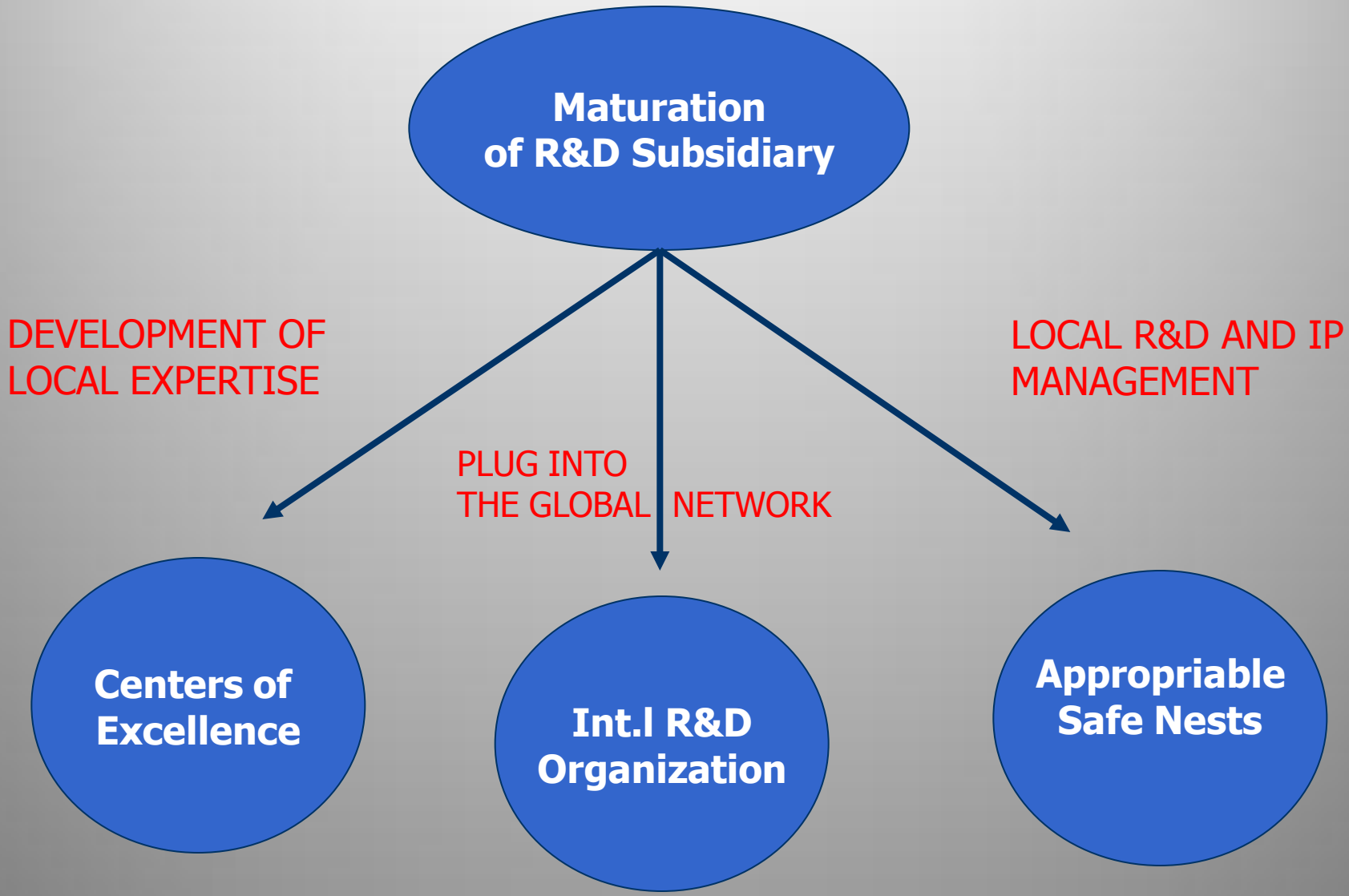
Findings

- The Patel Pavitt paradox remains!
  - In a very globalized industry we still see strongly homebound inventive activities once 'R&D' is dissected by economic/technological/strategic content
  - Concentration in the headquarters
- Why is this happening?

Why R&D non-globalization?
- Insights from the company interviews

- Demand and supply factors highlighted for offshored (FO patents) inventive activity
- In-house R&D (DO patents) still remains important due to 'intermediating factors':
  - Accumulated 'sticky' knowledge at HQ, organizational inertia
  - Maturation effect and steep learning curves in R&D internationalization
  - Importance of centralized IP management in this particular industry

Conclusions: Developing and Managing Islands of Appropriability



To be continued

Special issue on
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“IP Management: in search of new practices, strategies and business models”

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Grazie per l'attenzione

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