

Jean-Alain HÉRAUD



*International Doctoral Programme in Economics  
Sant'Anna School of Advanced Studies –Pisa  
& Faculty of Economics - Strasbourg*

# Regional Innovation systems and policies

December 2009



# References

For downloading presentation:

[http://www.laponies.fr/jah/cours/RNI\\_Strg\\_Pisa\\_2009.ppt](http://www.laponies.fr/jah/cours/RNI_Strg_Pisa_2009.ppt)

Useful documents :

- Reports of the European Commission  
[http://ec.europa.eu/regional\\_policy/sources/docoffic/official/repor\\_en.htm](http://ec.europa.eu/regional_policy/sources/docoffic/official/repor_en.htm)
- OST (Observatoire des Sciences et des Techniques), *Indicateurs de sciences et de technologies*, Paris: Economica, 2008  
<http://www.obs-ost.fr/fr/le-savoir-faire/etudes-en-ligne/travaux-2008/rapport-biennal-edition-2008.html#c700>

# 1. Science and technology variables

## a) Definitions

# From scientific discovery to innovation

Domains	Activities	Results <i>measure</i>
Science	Research (speculative or finalized)	Scientific discovery <i>publication</i>
Technology	Applied research	Invention <i>patent</i> <i>(not systematically)</i>
Economy/ society	Industrial and commercial development	Innovation <i>turnover, profits, employment,...</i>

# *Innovation as implementation of new combinations*

## **Schumpeter (1931)**

- *"Herstellung eines neuen, d.h. dem Konsumentenkreis noch nicht vertrauten Gutes oder einer neuen Qualität eines Gutes,*  
*Product innovation (radical or incremental)*
- *Einführung einer neuen, d.h. dem betreffenden Industriezweig noch nicht praktisch bekannten Produktionsmethode,*  
*Process innovation (radical or incremental)*
- *Erschließung eines neuen Absatzmarktes,*  
*Market innovation*
- *Eroberung einer neuen Bezugsquelle von Rohstoffen oder Halbfabrikaten,*  
*New source of materials or intermediary good*
- *Durchführung einer Neuorganisation wie Schaffung einer Monopolstellung (...) oder Durchbrechen eines Monopols".*  
*Organizational innovation*

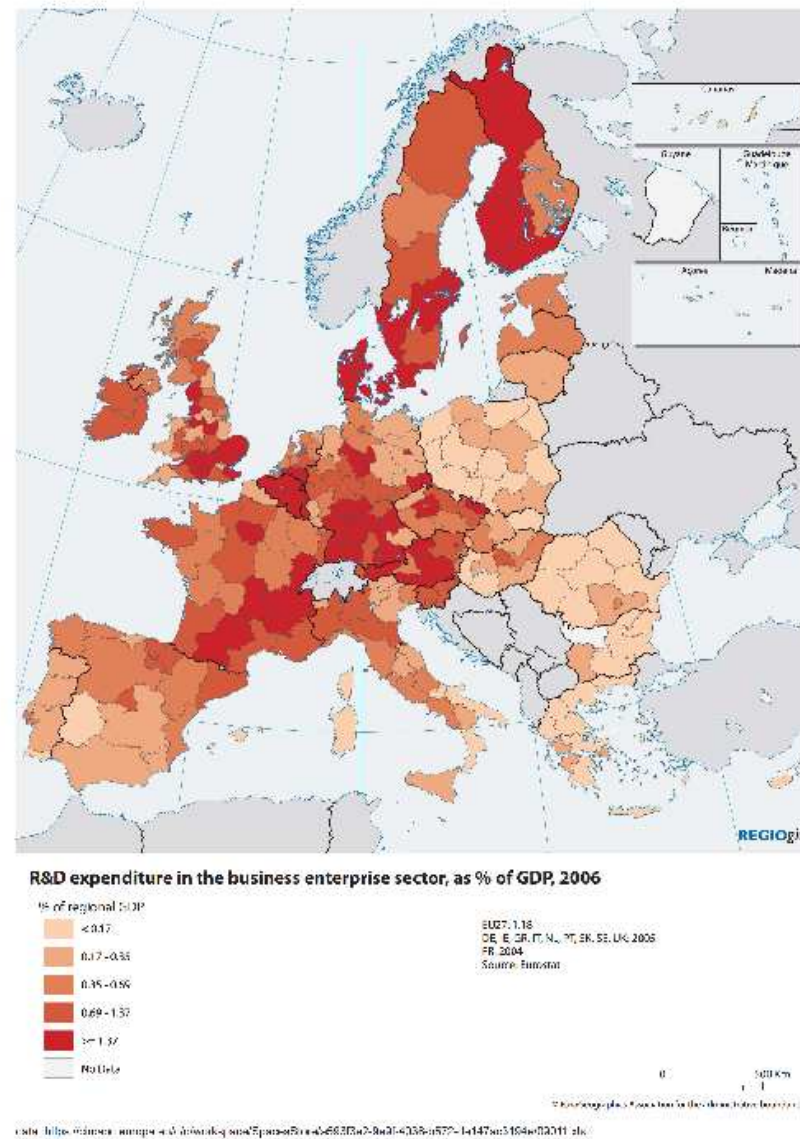
# 1. Science and technology variables

## **b) Indicators**

# Main statistical definitions

- Input: Research
  - Domestic R&D expenditure: public and private sector
- Output/Science: publications
  - Data bases of papers published in international scientific reviews
    - publications index
    - citations index
- Output/Technology: patents registered (at the European Patent Office for instance)

### Example 1: Firms R&D in EU regions (% GDP)

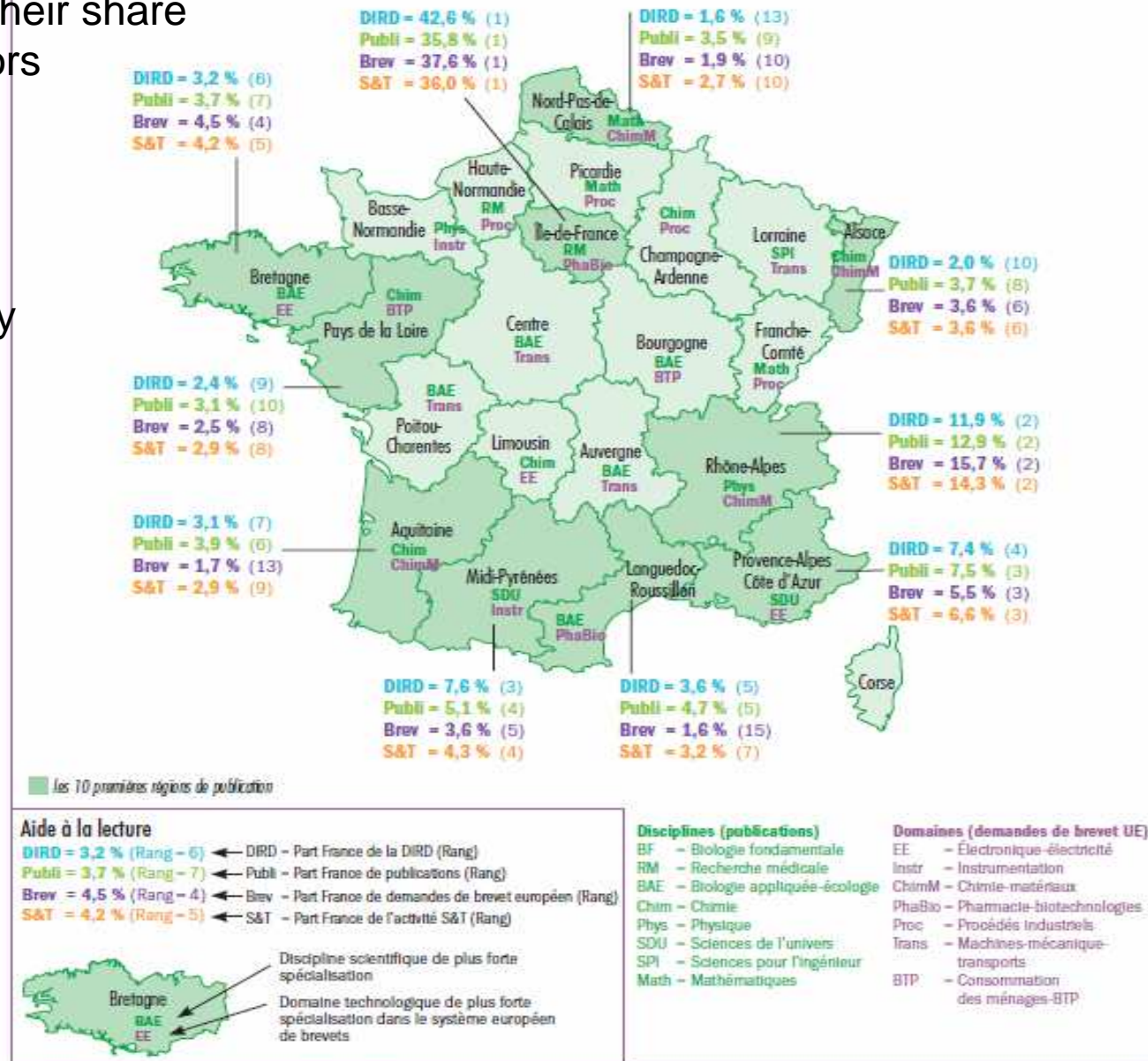




Example 2: French regions characterised by their share of various indicators

- R&D expenses
- Publications
- Patents
- Sc & Tech activity

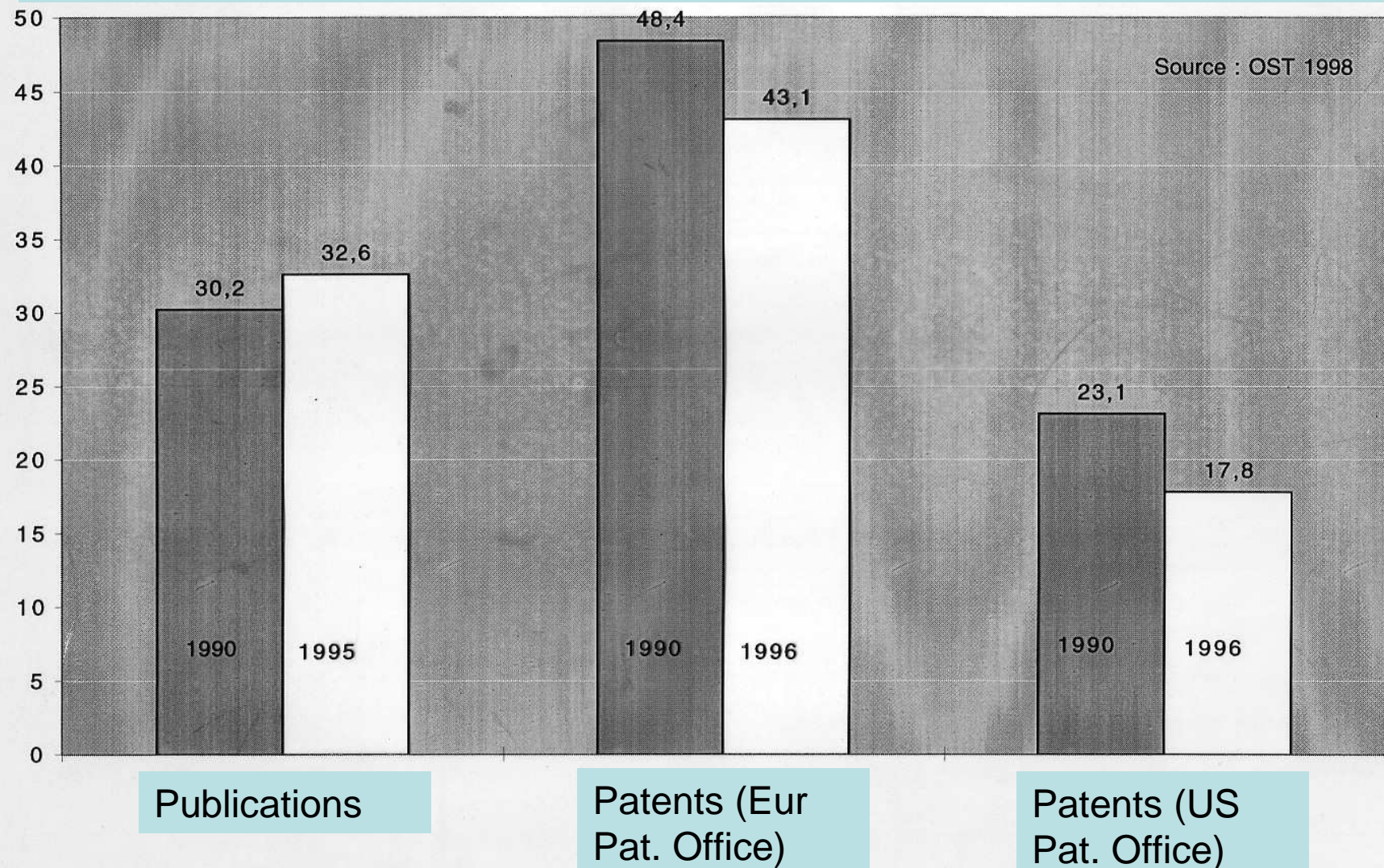
## La R&D des régions françaises en quelques chiffres



Source: OST



*The use of S&T indicators for policy design:*  
The share of Europe in the world's scientific and technological production

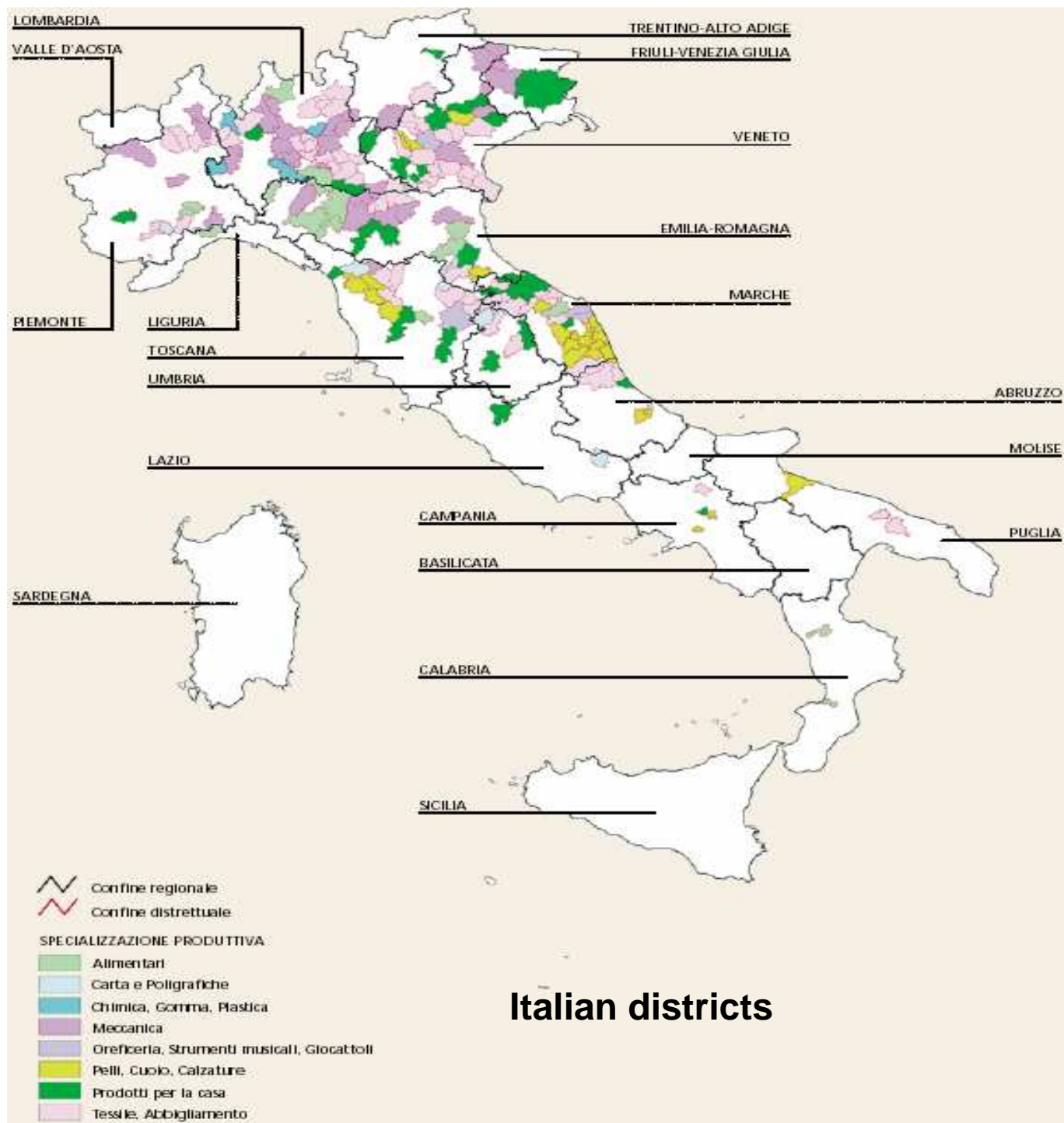


## 2. The spatial dimension

### **a) Clusters as an observed reality**

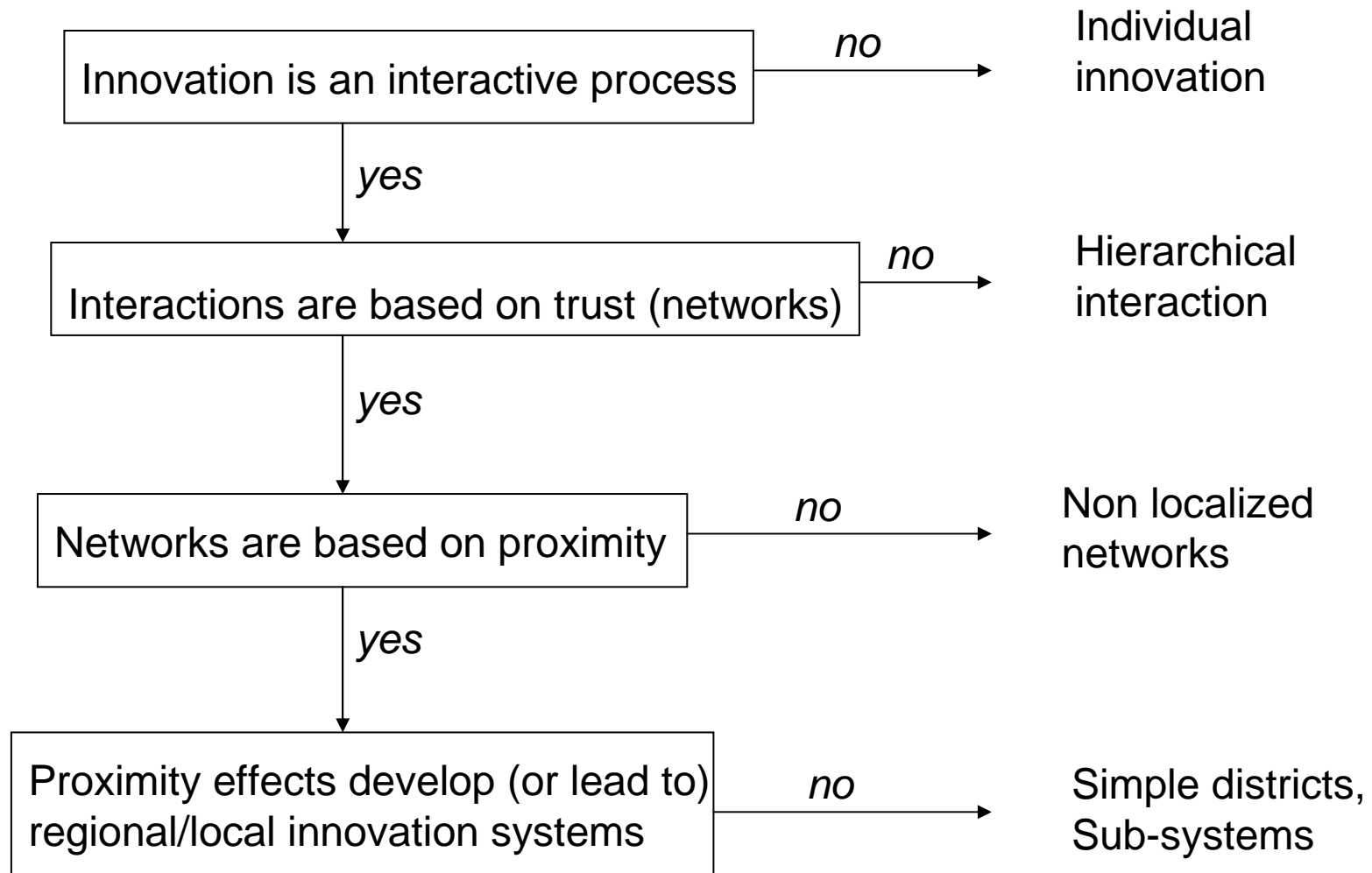
# Alfred Marshall's concept of industrial district

- *Principles of Economics (1920): Agglomeration effect, concept of externalities plus geographical dimension*  
*“Industries tend to **cluster** in distinct geographic districts, with individual cities specializing in production of narrowly related set of goods”*
- The name **cluster** is now used in a variety of situations:
  - High tech clusters: **Silicon Valley** Palo Alto, CA (cf ROGERS, LARSEN, 1984) **Route 128** near MIT at Boston, MA (cf SAXENIAN, 1994)
  - Giacomo BECATTINI “Third Italy model”
  - Michael PORTER “Clusters and the new economics of competition” (Harvard Business Rev.1998)
  - Richard FLORIDA’s *Learning region*
- Conclusion: « space does matter »





# The territorial embeddedness of innovation process: theoretical relevance



## 2. The spatial dimension

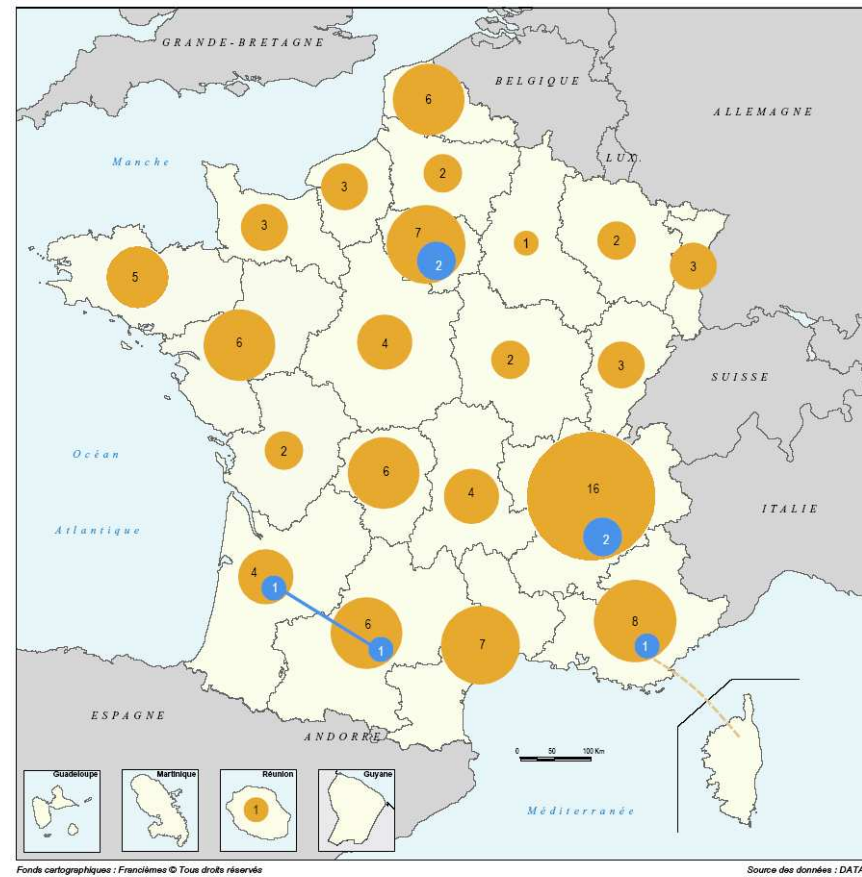
### **b) Clusters as a policy instrument**

# Cluster policy

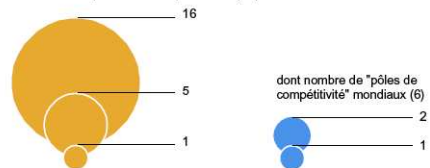
- Clusters are not only given systems, they are (trendy) policy instruments
- Cluster policies in almost every country now.
  - France: « politique de clusters », « de grappes », « Pôles de compétitivité »
  - Italy: « distretti industriali »
  - ...
  - « Kümelenme » .... which language?



## French cluster policy : *Pôles de compétitivité*



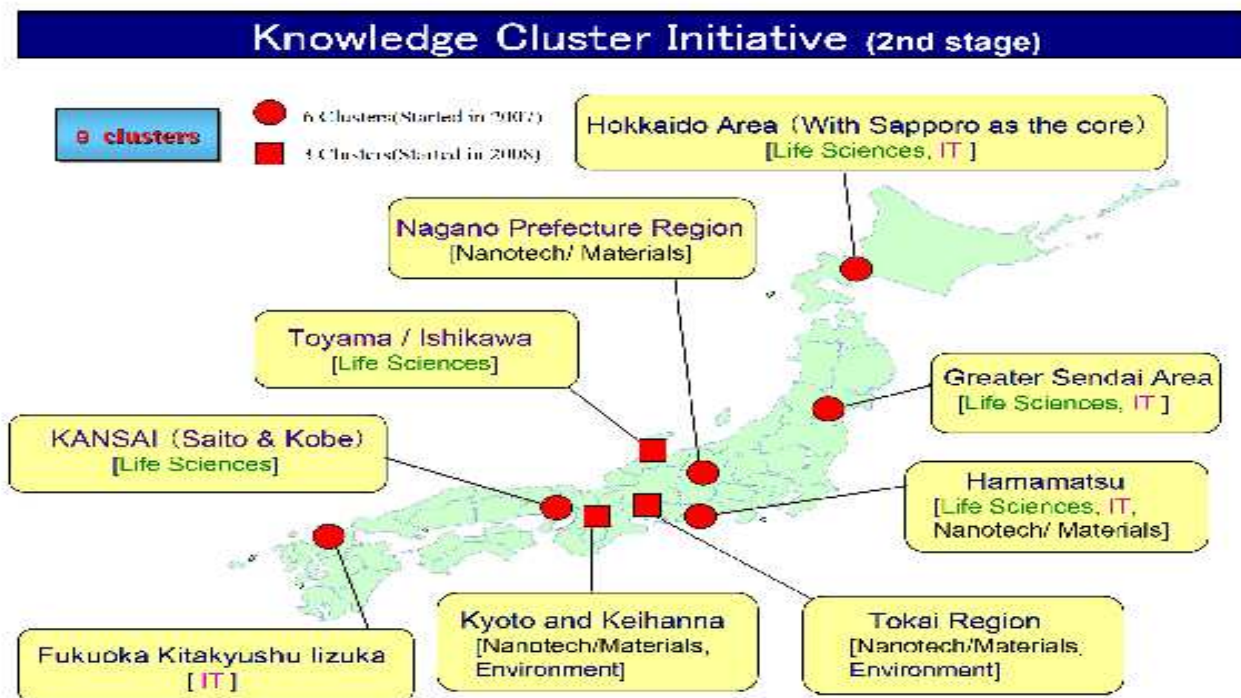
Nombre de "pôles de compétitivité" (67)



**NB :** Les pôles interrégionaux sont comptés dans chaque région concernée. Ceci explique que le total des chiffres régionaux soit supérieur à 67

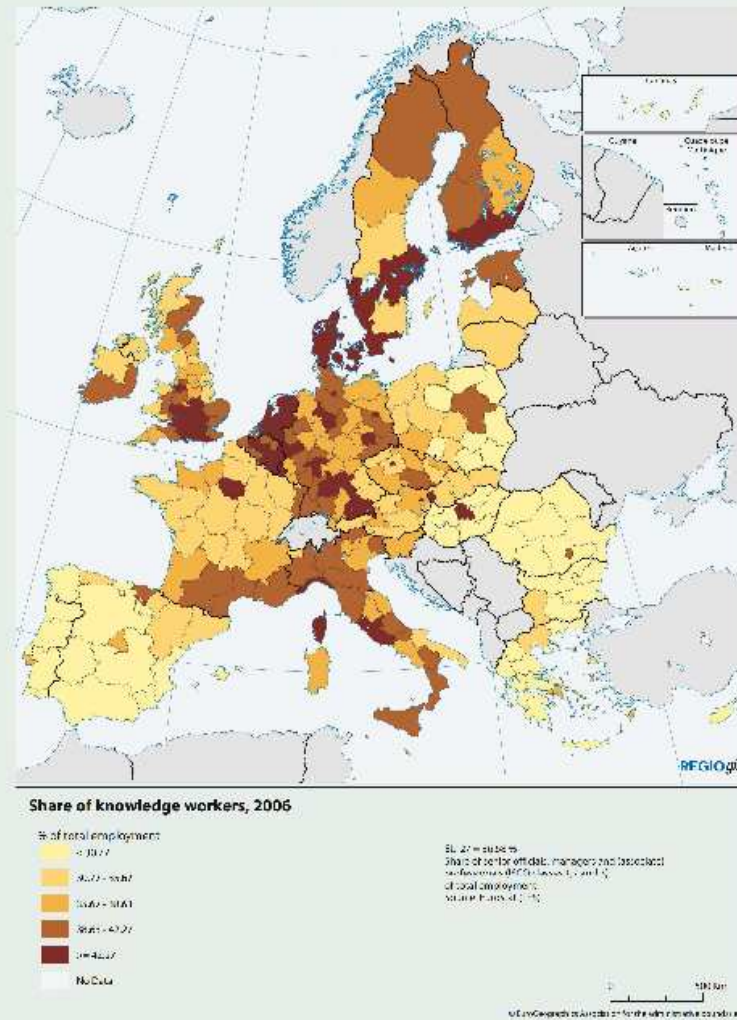
Réalisation : DATAR - Observatoire des Territoires. 11/07/2005

## Japanese cluster policy



### 3. New trends in the study of the knowledge-based economy

## The knowledge-based economy



# Trendy ideas and words

- **Creativity**
  - Sternberg, Labort (2008): "*Creativity is the ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive concerning task constraints).* »
- **Scientific/technological knowledge is not the unique source of creativity leading to innovation**
  - Culture of innovation (entrepreneurial spirit: 50% of innovation?)
  - Creative industries (from artistic creation, and the like...)
- **Talents and territories**
  - Richard Florida, *The Rise of the Creative Class*

# R. Florida's model of regional development

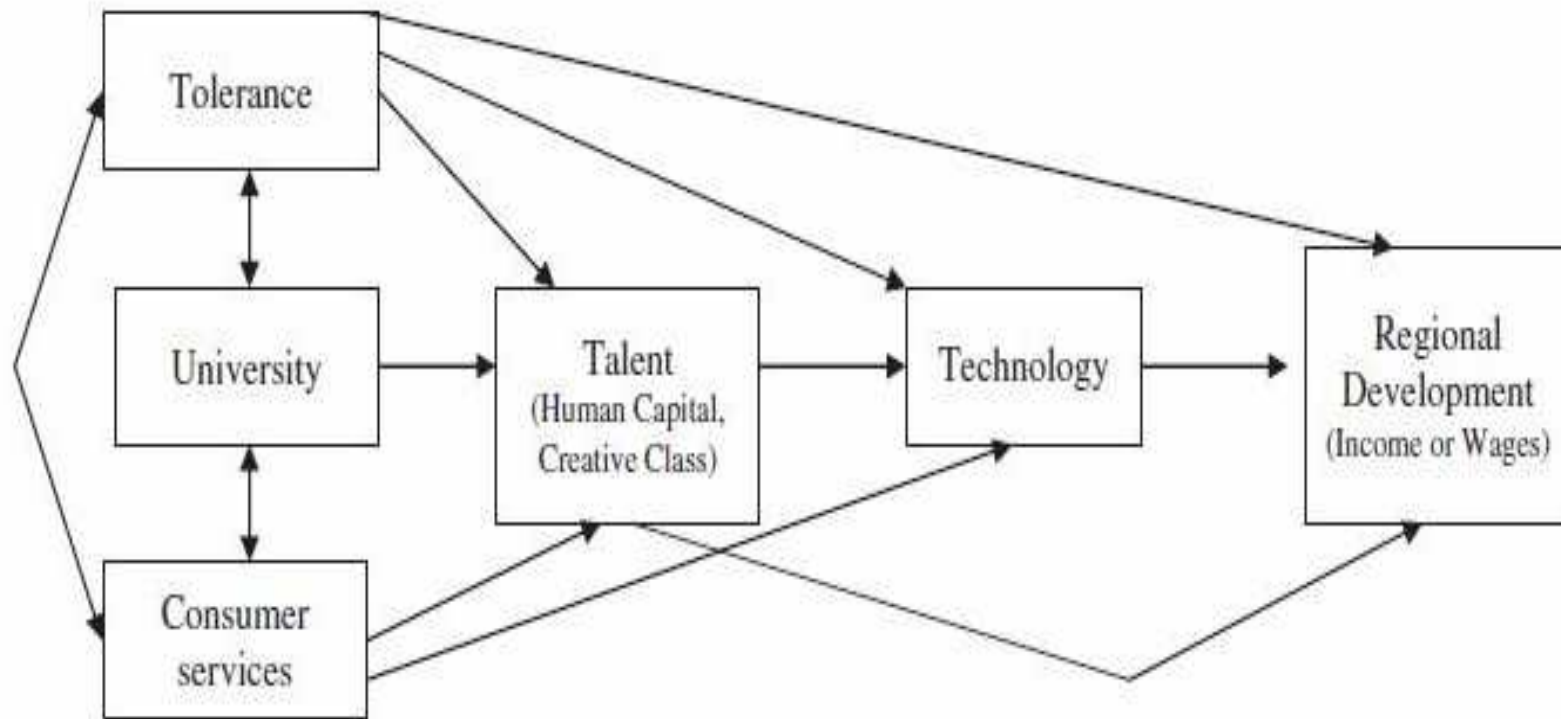
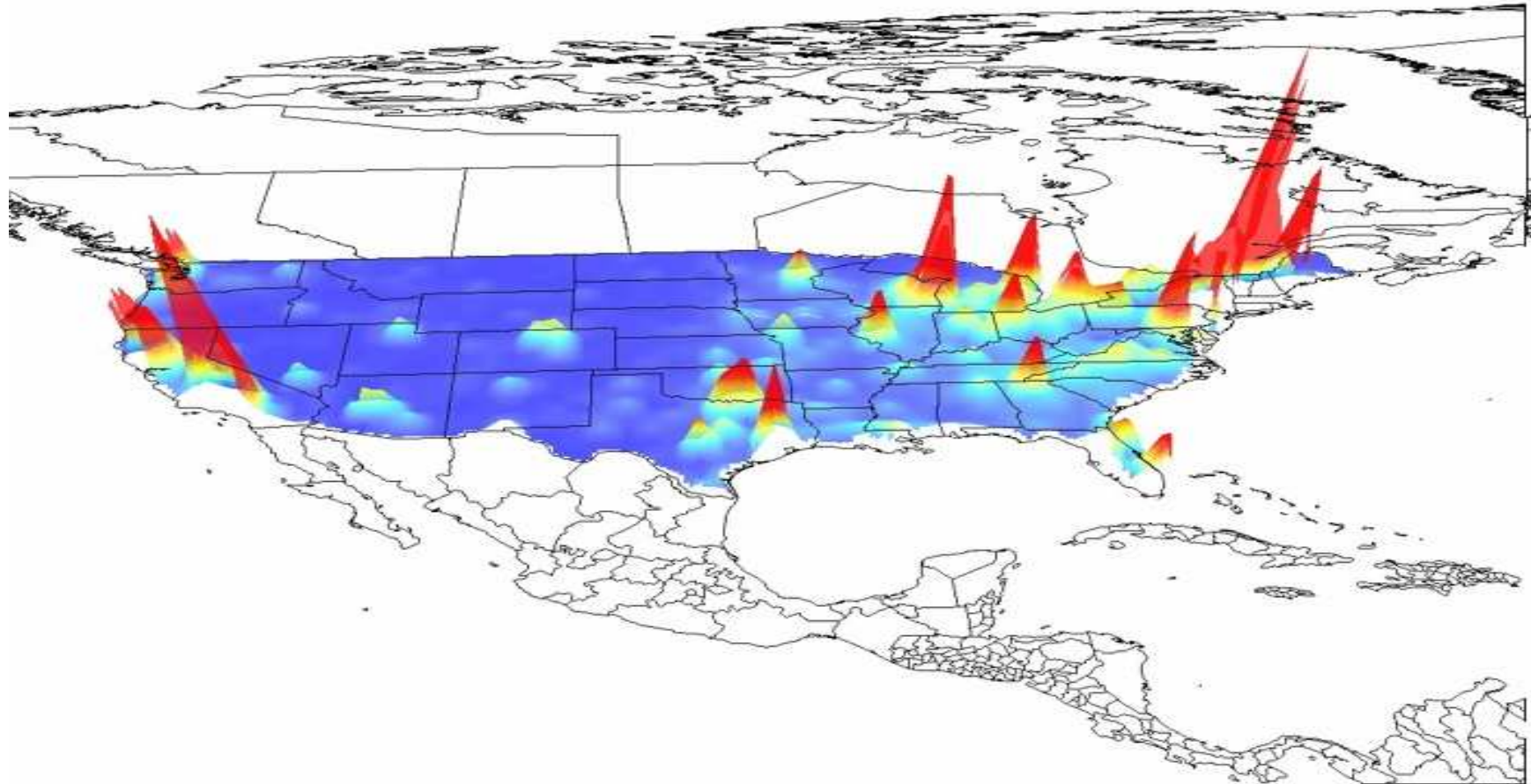


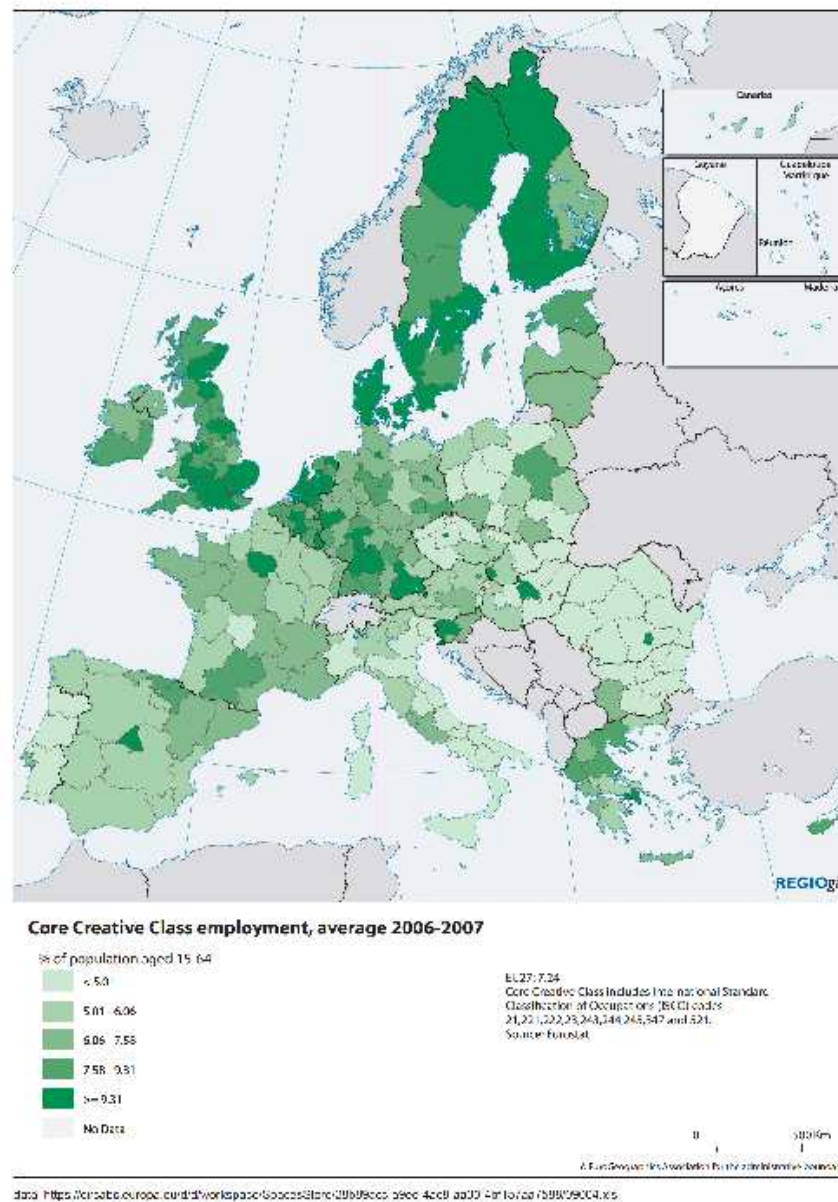
Figure 1. Path model of the regional development system.

# R. Florida's talent mapping: USA





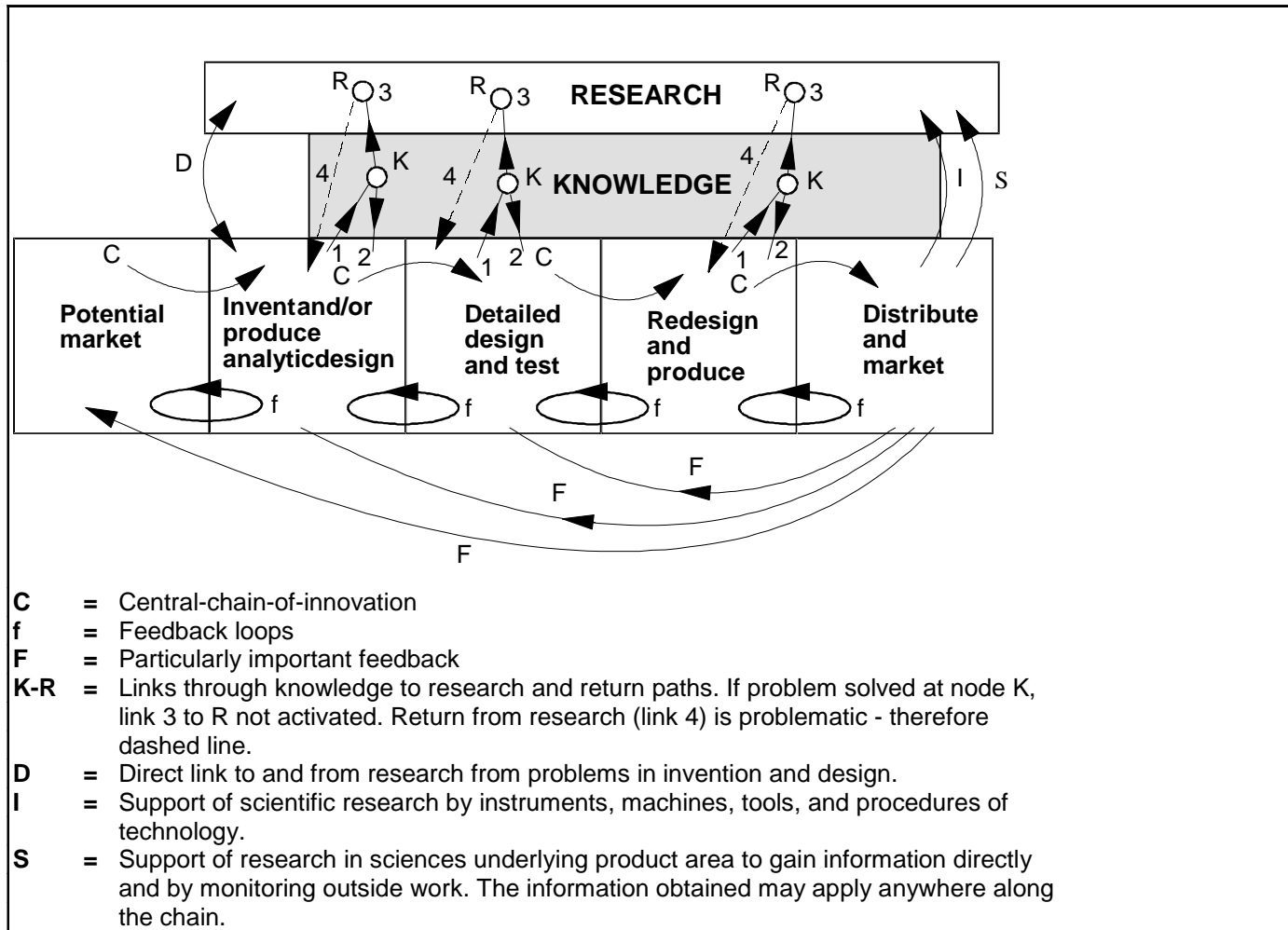
## Mapping R. Florida's Indicators in Europe





## 4. The nature of innovation process and the concept of innovation system

# The “Chain-linked model” (Kline & Rosenberg, 1986)



## *National System of Innovation*

### Some definitions

- **Freeman 1987**

The network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies

- **Lundvall 1992**

The elements and relationships which interact in the production, diffusion and use of new, and economically useful, knowledge (...) and are either located within or rooted inside the borders of nation states.

- **Nelson 1993**

The national institutions whose interactions determine the innovative performance (...) of national firms

- **Patel, Pavitt 1993**

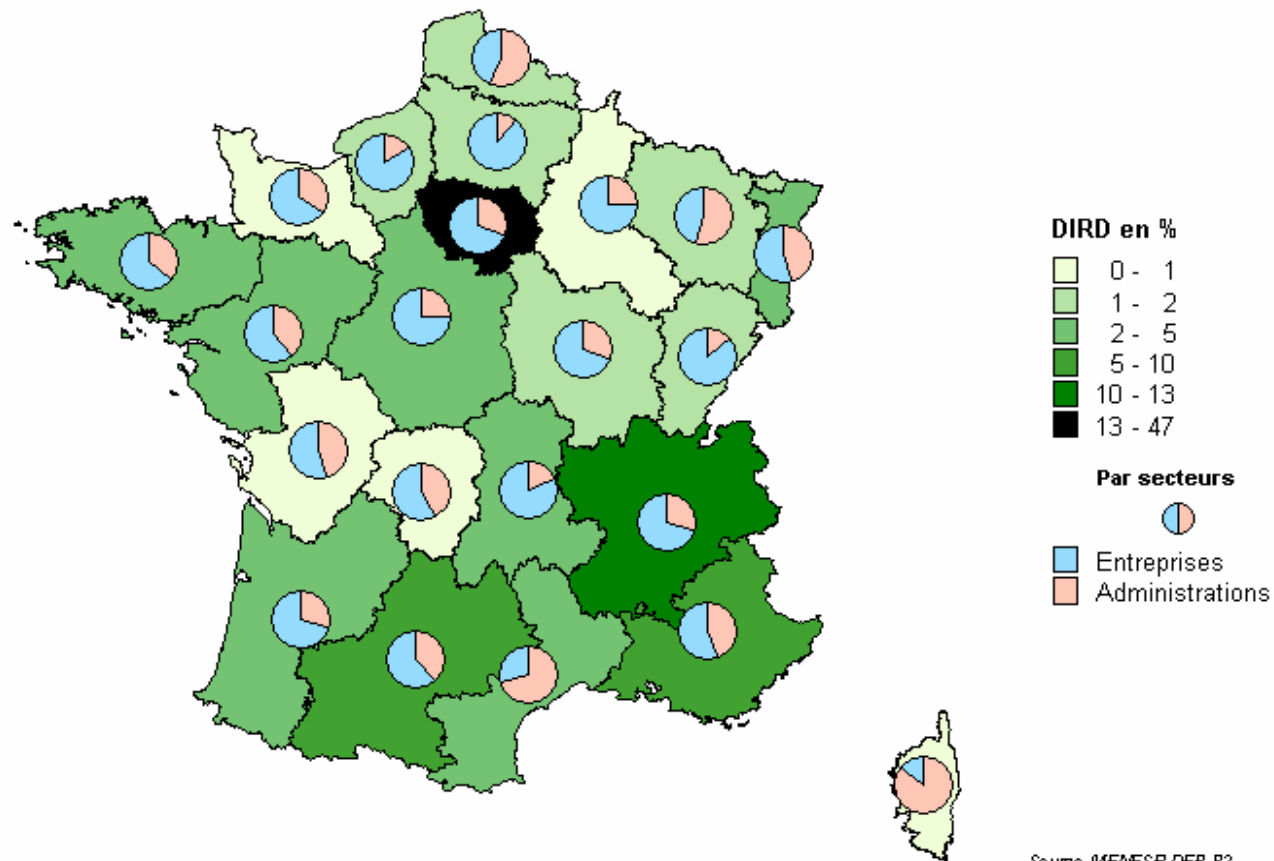
The national institutions, their incentive structures, and their competencies, that determine the rate and direction of technological learning in a country.

# Defining a concept of regional innovation system?

- Regional systems (if such a things exist) are necessarily very open
- They are characterized by complex multi-level governance of science and innovation
- Smaller territories are often strongly impacted by multi-actor governance
- Policy mix is also typical on such geographical levels

## Regional typology of R&D activity in France (2002)

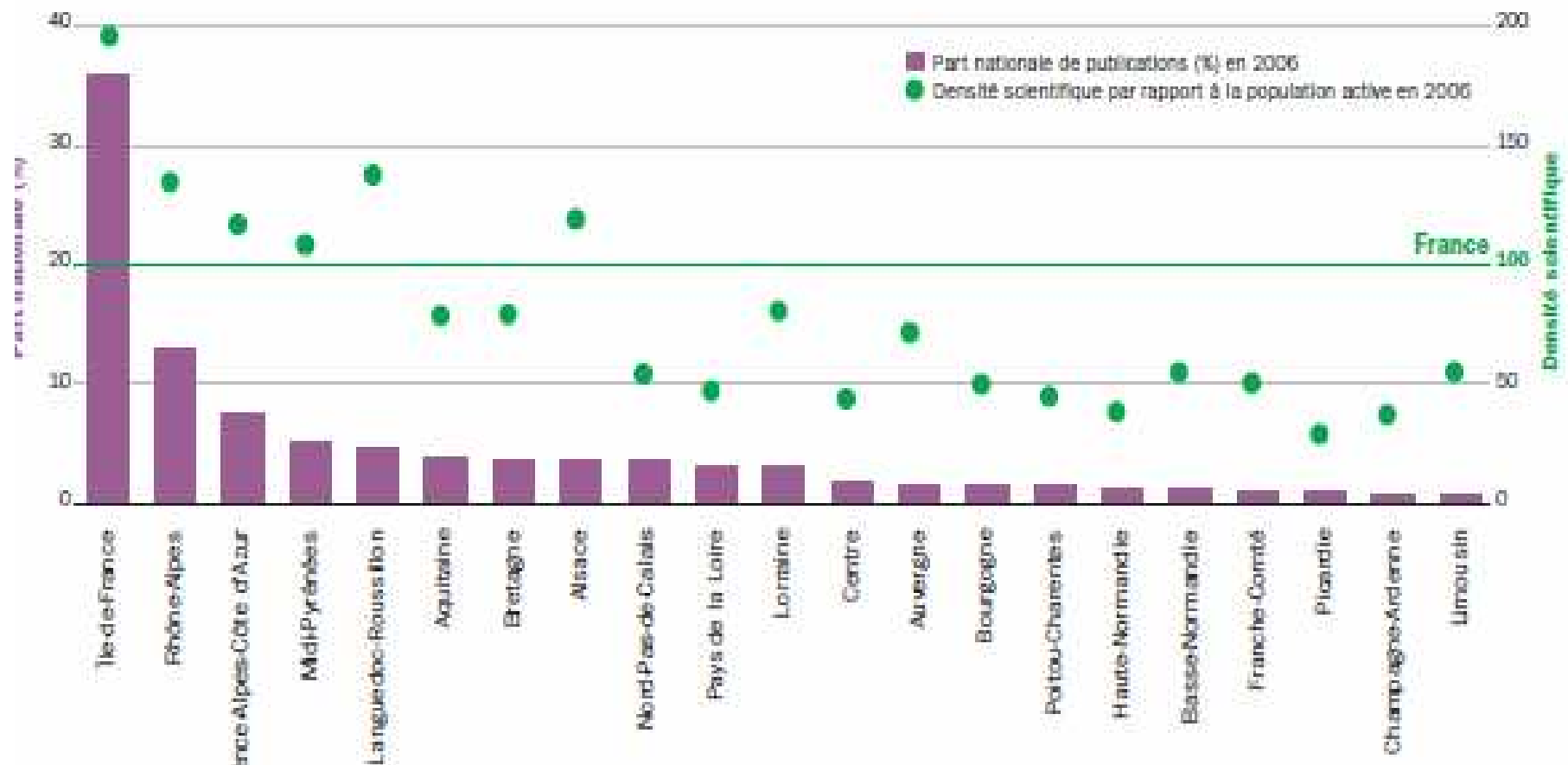
With private and public contributions



# Regional contributions to the national scientific production

**Figure 2-3-1**

Part nationale de publications et densité scientifique par rapport à la population active des régions françaises en 2006



données 2006

## 5. Example of statistical analysis of regional characteristics

# Factor analysis

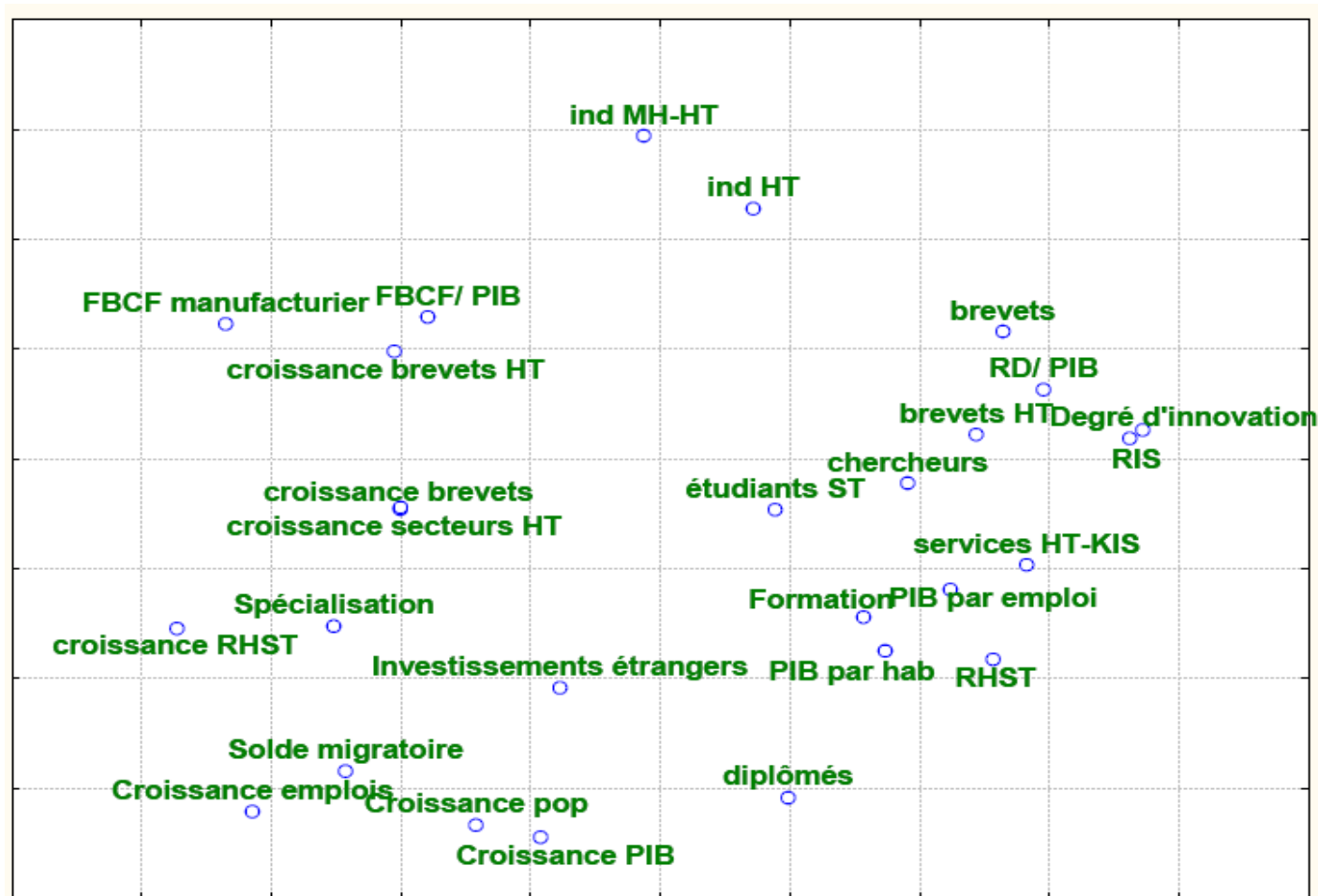
## *of regional innovation systems*

On the basis of statistics computed by  
Jean-Claude PRAGER  
avril 2008

***ADIT, Méthode de diagnostic du système d'innovation des régions françaises***

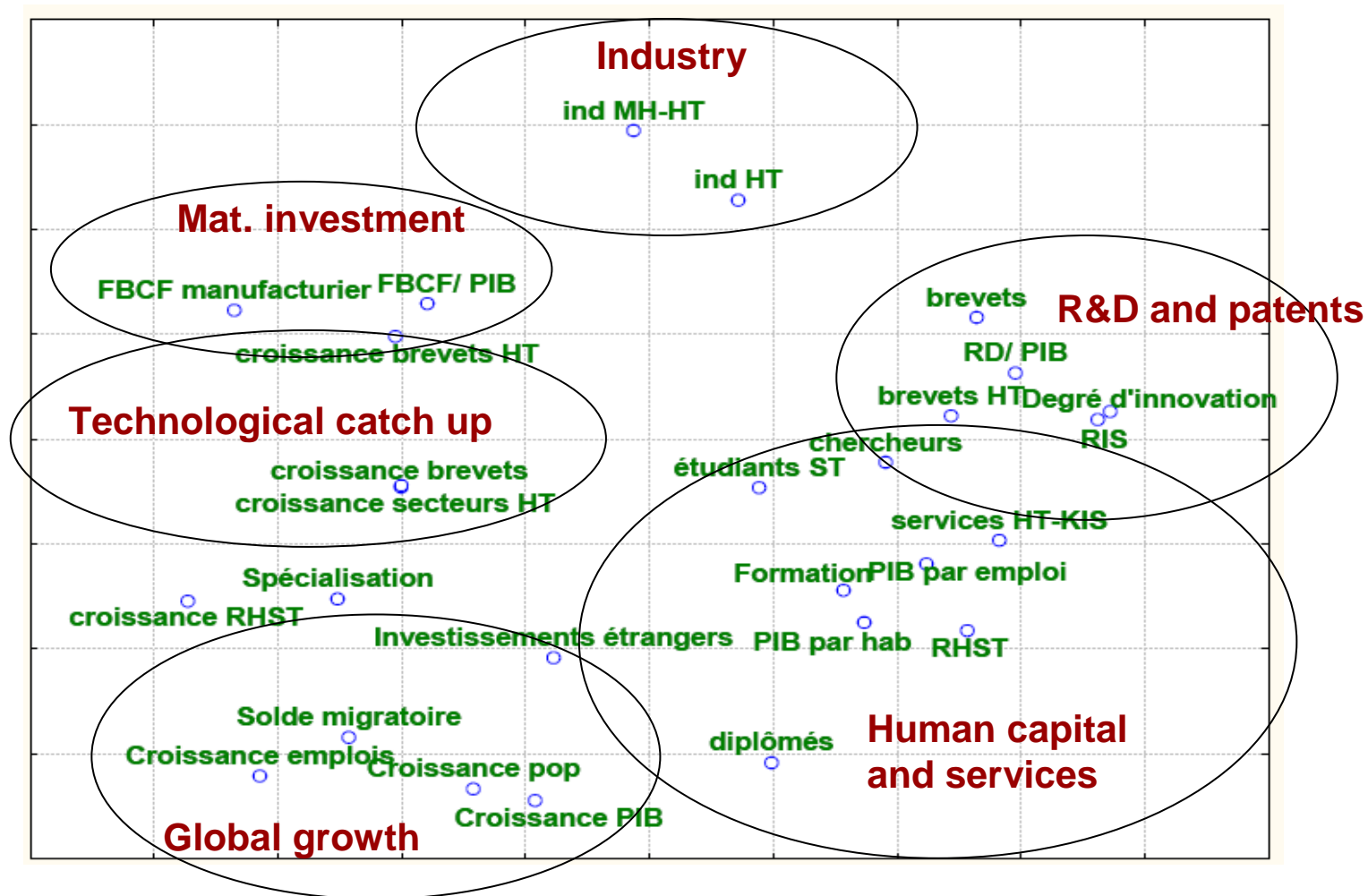


## *Projection of variables on the first two axes of factor analysis*



Source: Jean-claude PRAGER, ADIT

## Regrouping in six main categories



## Positionning the countries

