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Medium and Long-Term Economic Consequences of Natural Disasters on Territories

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OUTLINE

1. **Economic impact: strong**
2. **Economic impact is about resilience**
3. **Factors for resilience**
4. **Factors for resilience to disasters are similar to resilience to any shock to the economy:
Case of the Emilia-Romagna Region**
5. **Economic development policies – industrial policies in particular– must aim at a territory's resilience**



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1. Strong economic impact



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A natural disaster generally has a strong impact on an economy:

Like a ball that would be crashed against a wall

The economic impact depends on how much the ball bounces back



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Especially if:

- Magnitude of the disaster is high
- Disaster was sudden and unexpected
- The higher the development level of the affected territory, the lower the impact



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IMPACT is both:

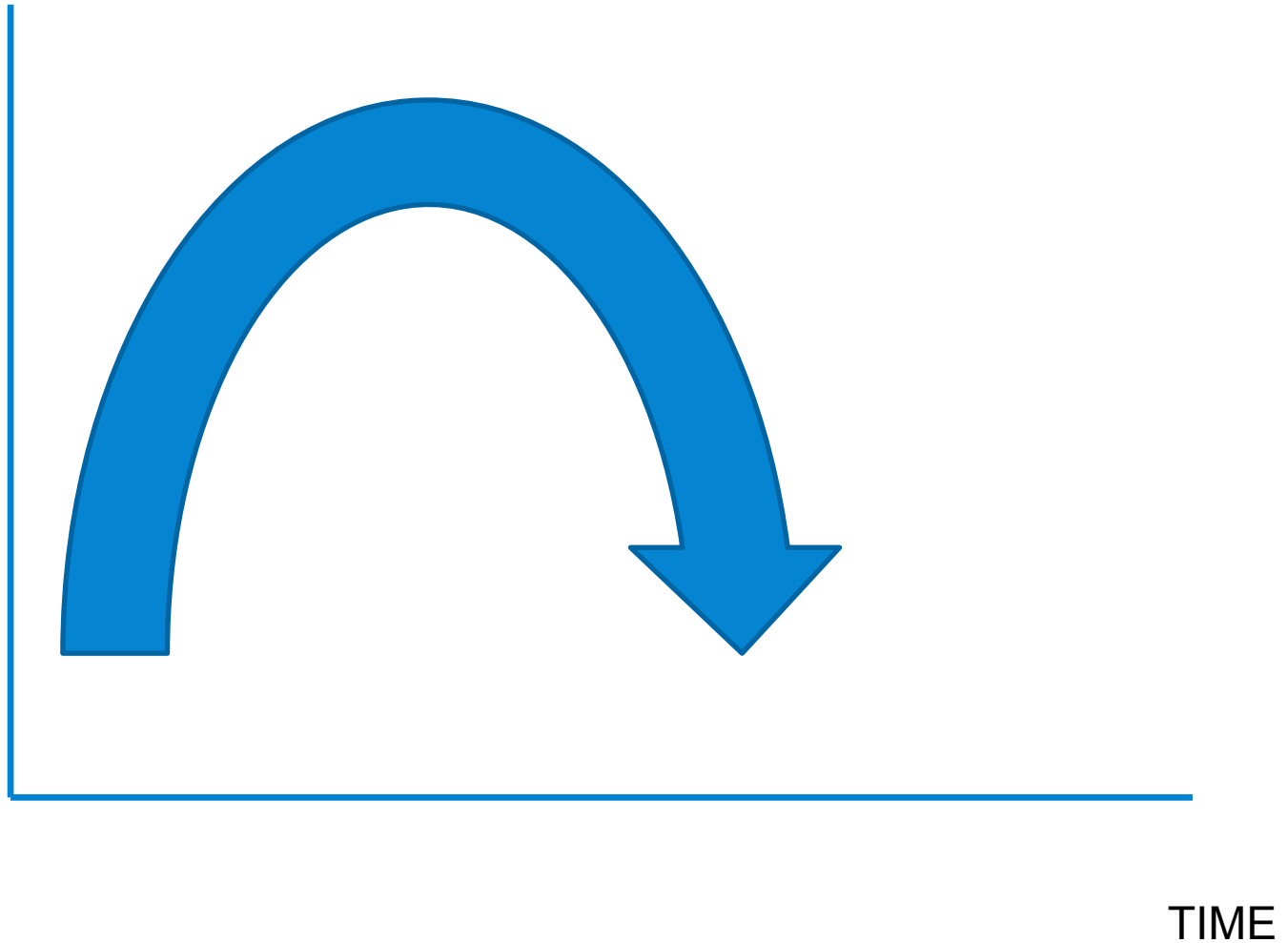
DIRECT

Number of destroyed houses and buildings,
number of injured and death, non-usable
roads, etc.

INDIRECT

Reduction in business revenue due to disaster
Unemployment due to the disaster

Economic impact of disasters (Lester, 2008)





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Distinguishing medium and long-term is important because the type of intervention by the government differs: medium-term is emergency, long-term is reconstruction and development



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Key role of governments in impact reduction:

- Possibly preparation to disasters
- Emergency and reconstruction policies

All studies and cases point to government intervention as a key factor for recovery – resilience

Also preparation: with climate change disasters are more likely and preparation is required, as stressed by governments and international organisations (UN and Hyogo – Sendai Frameworks)



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APPROPRIATE LEVEL OF GOVERNMENT INTERVENTION?

Disasters generally affect a particular region and territory

⇒ Appropriate level is national or local?

⇒ All studies and cases agree that bottom-up approaches are more effective

- Involvement of local communities
- Democratic participation

Are key elements for effective recovery and reconstruction



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Although many countries have national systems of emergency and recovery management

National governments are more able to mobilise resources (especially financial)

But are more distant from local communities, from the information necessary to define the priorities of emergency and reconstruction policies

⇒ Problem especially when decisions have to be taken **rapidly**



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⇒ Often even in centralised systems difficulties are resolved thanks to the initiative of local communities

Examples:

Earthquakes in Kobe in Japan in 1995

Earthquake in Marmara in Turkey in 1999 (Özerdem e Jacoby, 2006)

Katrina Hurricane in 2005 (Boettke et al., 2007)

Earthquake in L'Aquila in 2009 (Alexander, 2010; Fois and Forino, 2014)



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2. Economic impact is about resilience



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Resilience: definition

- Defined in biology to indicate capacity for adaptation of living organisms after shock in their natural environment (ecosystems)
- Resilience to disasters = capacity to return to pre-disaster situation
- Resilience is increasingly used in Economics: capacity to return to pre-shock situation (same development path) or to improved economic situation (new development path)



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Regional resilience:

- Capacity of regions to reshape their socio-economic structure (Boschma)
- Regions as complex adaptive systems (Martin and Sunley; Bristow and Healy)
- Dynamic process
- Adaptation: capacity to maintain a specific development path
- Adaptability: capacity to embark into new development paths



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Preparing for resilience:

- Plan of actions in case of emergency
- Best action to prepare for resilience is preparing communities: social cohesion and socio-economic development as key to resilience



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Alizadeh et al. (2013)

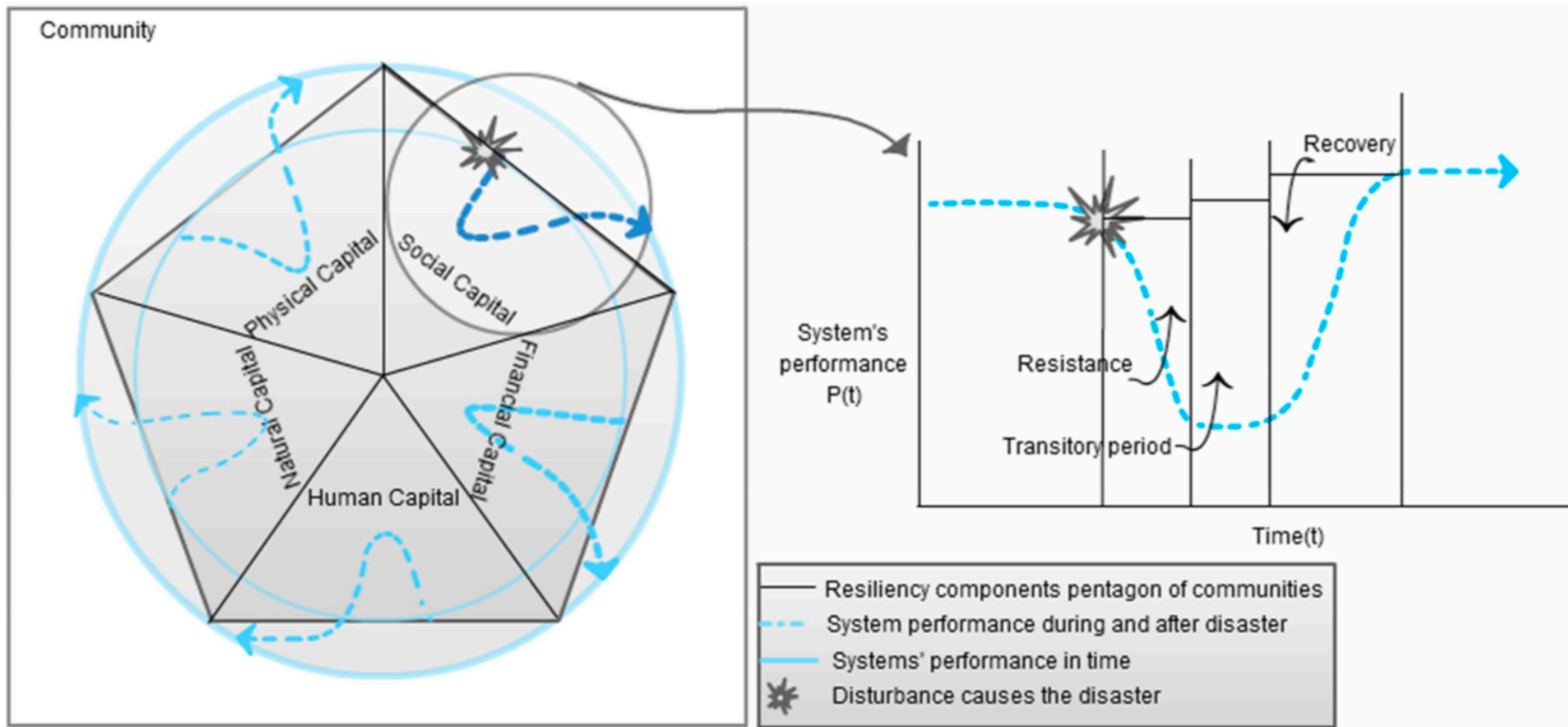


Figure 1: A model of disaster resilience models



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3. Factors for resilience



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Resilience depends on development level,
preparedness:

Models of Disaster resilience (many have been
proposed, huge literature):

Mitigation (activities reducing the impact of
potential disasters, such as building regulation,
insurance, risk mapping, etc.)

Preparation (emergency plans, alarm and
information systems, etc.)



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Models of Disaster resilience (cont.ed)

Reaction: measures expected before, during and immediately after disasters such as implementation of emergency plans, medical assistance, information for the affected population, etc.

Reconstruction: short-term actions to ensure security and long-term actions that allow to return to normal life



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4. Resilience to disasters and resilience to any shock: case of the Emilia-Romagna Region





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Emilia Romagna: strong capacity for resilience

- Earthquake in 2012
- Transformation of the industrial system from districts in traditional sectors to regional innovation system (adaptation to changing competitive context)



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EARTHQUAKES IN THE EMILIA-ROMAGNA REGION MAY 2012



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Natural catastrophes like earthquakes create dramatic and sudden uncertainties which have to be managed. These uncertainties generate a great risk of dismantling of social networks underlying local communities, which the experience in the Emilia-Romagna Region show to be fundamental for resilience and reconstruction after a catastrophe such as an earthquake.



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Earthquakes

On 20 May 2012,
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on the Richter scale; 29
May a second
earthquake of
magnitude 5.8



Big physical damages (few injuries)







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THE EARTHQUAKE AFFECTS AN AREA OF THE REGION WHICH IS **THE INDUSTRIAL CORE**

- ⇒ IMMEDIATE MOBILISATION AT REGIONAL LEVEL:
- ⇒ MANAGE EMERGENCY AND FAVOUR RAPID RECONSTRUCTION TO PRESERVE THE INDUSTRIAL CENTRE
- ⇒ IMMEDIATE MEASURES SIMULTANEOUSLY TOWARDS INDUSTRIAL ACTIVITIES BUT ALSO TO AVOID SOCIAL FRAGMENTATION
- ⇒ INDUSTRY AND SCHOOLS AS PRIORITIES



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LEADERSHIP

The regional government immediately decided to **initiate reconstruction starting from schools:**

Participation and sense of belonging of the local communities are strong in the ER region

The school is a **key element of the social community**, hence all efforts were made to both allow pupils to finish their year of schooling (final exams, etc.) and to make sure that the new academic year would start as usual in September 2012.



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GOVERNANCE

Unlike the case of L'Aquila (earthquake in 2009), no external institution was called to manage the reconstruction:

Committee for the Reconstruction comprising mayors of the cities affected by the earthquake (President of the Region as Head).

Signalling of mobilisation and transparency

Rapid action was decided: especially for social cohesion, and to favour restart of productive activities



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5 months after the earthquake:

All pupils were at school

Unusable schools rebuilt in prefabricated class A buildings

Damaged schools repaired by the municipalities

Factories had restarted with increased capacities

New high tech labs

No escape even of multinational firms

Local SMEs were involved in the process

Policy convergence: territory, education, welfare and innovation



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Mirandola Biomedical Cluster

About 90% of firms of the cluster are damaged by the earthquakes

Immediate reaction of the regional government:

- Request to the health system to pay all due products and services
- Temporary shift of production in other areas, in ER or outside



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- ⇒ A few weeks later most firms had already restarted production:
- Bellco: restart of production and R&D only three weeks after the second
 - B. Braun: after 2 months + end 2012 with revenue up 8%
 - Eurosets: 2012 +8% revenue and + 20 employees
- ⇒ Not only rapid restart of production but rise in production capacity !!!



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Survey of firms in the Mirandola biomedical Valley (on effects of regional government policies)

(Labory et al., 2016)



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% of firms agreeing with the following statements:

- Speed of political reaction by the regional government: 53%
- Active role of the region for the re-start of economic activities: 71%
- Speed of reaction of city authorities: 80%
- Role of the civil society for the re-start of economic activities: 87%
- Role of business associations: 90%



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Factors for resilience

3 main categories of factors outlined in the literature:

1. Structure: particularly related variety
2. Agency: role of people, networks, social capital
3. Governance: policy-making and policy implementation process

= factors for resilience to disasters

= factors for resilience to any shock



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Interplay of the three categories of factors
in the case of adaptation and
adaptability of a region:

The Emilia-Romagna region in Italy, 1980s
to today



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INDUSTRIAL POLICY IN THE EMILIA- ROMAGNA REGION: a long tradition

(Bianchi and Labory, 2011, 2014)

- 1980s: ER is model of flexible specialisation, with industrial districts in traditional sectors (Brusco, Sabel,...)
- 2000s: ER is model of regional innovation system, innovative region



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HOW DID THIS CHANGE HAPPEN?



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Industrial policy has had a significant role

- 1980s: focus on social services (to firms and to families and workers); education (technical schools)
- End 1980s: already doubt about the capacity of the district model to face changing competitive environment
- 1990s: policy aimed at building regional innovation system



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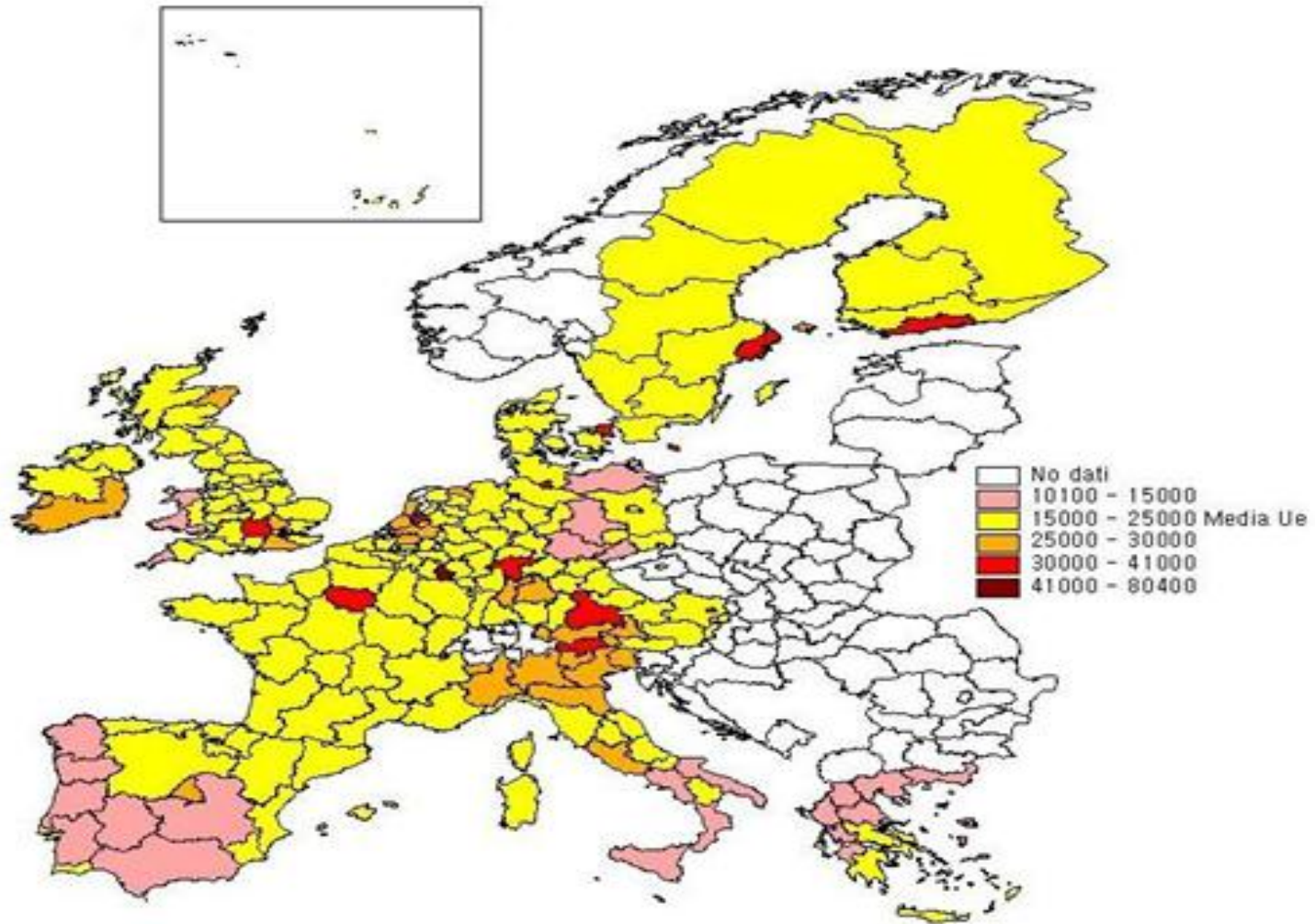


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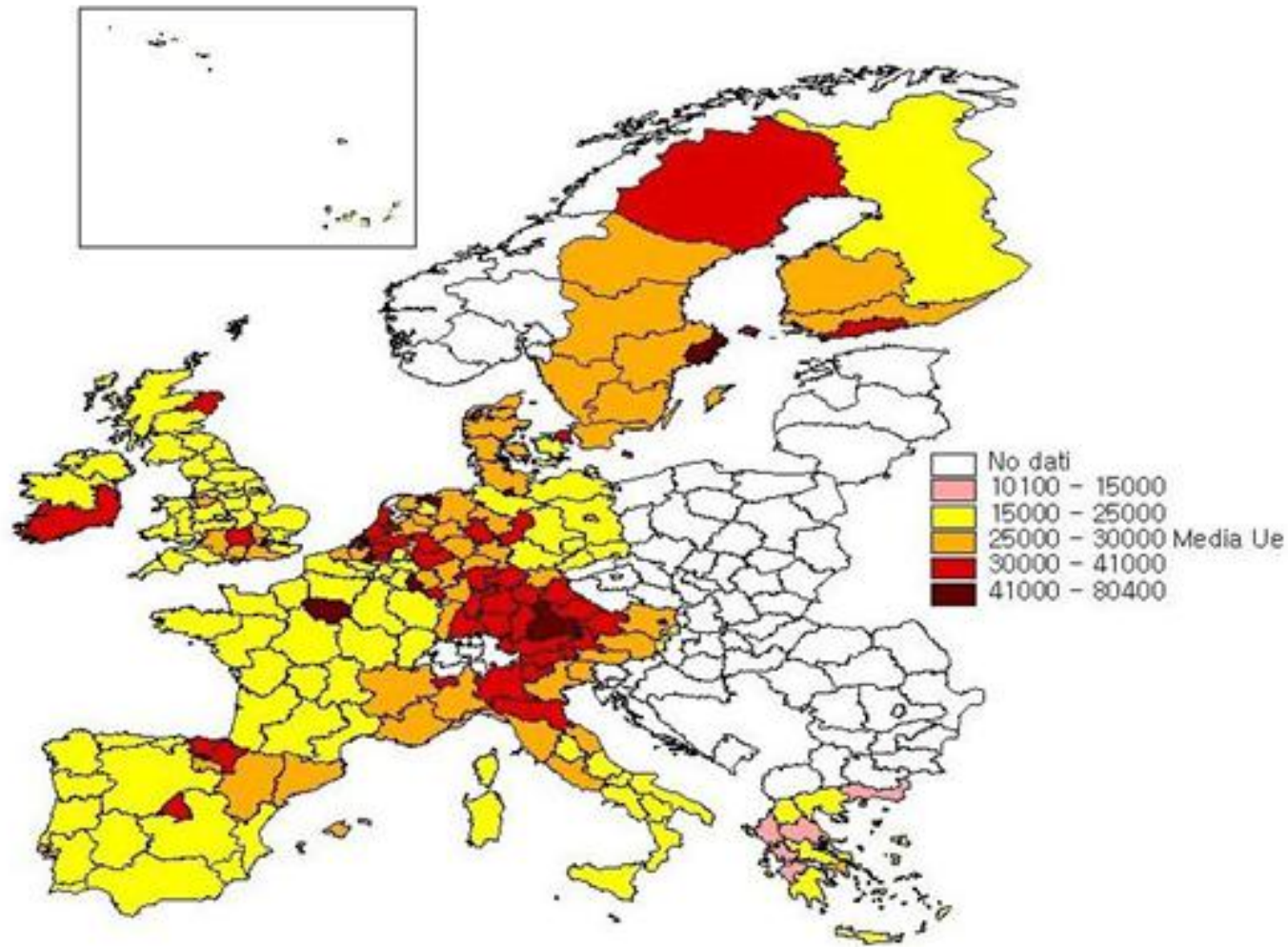
- 2000s: innovation, technological transfer, education and training, investment, infrastructure, social cohesion

NOW: preparation for a new shock to the economy – the fourth industrial revolution

GDP per capita, 2000



GDP per capita, 2011





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FACTORS OF RESILIENCE:

- STRUCTURE:** variety of sectors which are also related (e.g. mechanical engineering) + constant attention of policy-makers to favouring cross-synergies between sectors
- AGENCY:** strong social cohesion maintained and strengthened by policy (favouring participation in the labour force, integration of immigrants, besides training and education)
- GOVERNANCE:** coordination in MLG framework; anticipation (pro-active); leadership



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GOVERNANCE:

- Dialogue with stakeholders to define policy (e.g. Conferenza per l'economia e il lavoro)
- anticipation: already end-80s worry about the competitiveness of industrial districts and exploration of new opportunities (policy is proactive)
- leadership: (risky) choice made to embark on innovative path



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Conclusions

Disasters have strong negative economic impact

Lower economic impact when territories are resilient

Resilience = capacity to adapt to shocks

Important in case of disasters but also in case of any shock: resilience should be the aim of any regional development policy



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Thank you for your attention!