

TERRITORIAL CAPITAL AND REGIONAL GROWTH: INCREASING RETURNS IN LOCAL KNOWLEDGE

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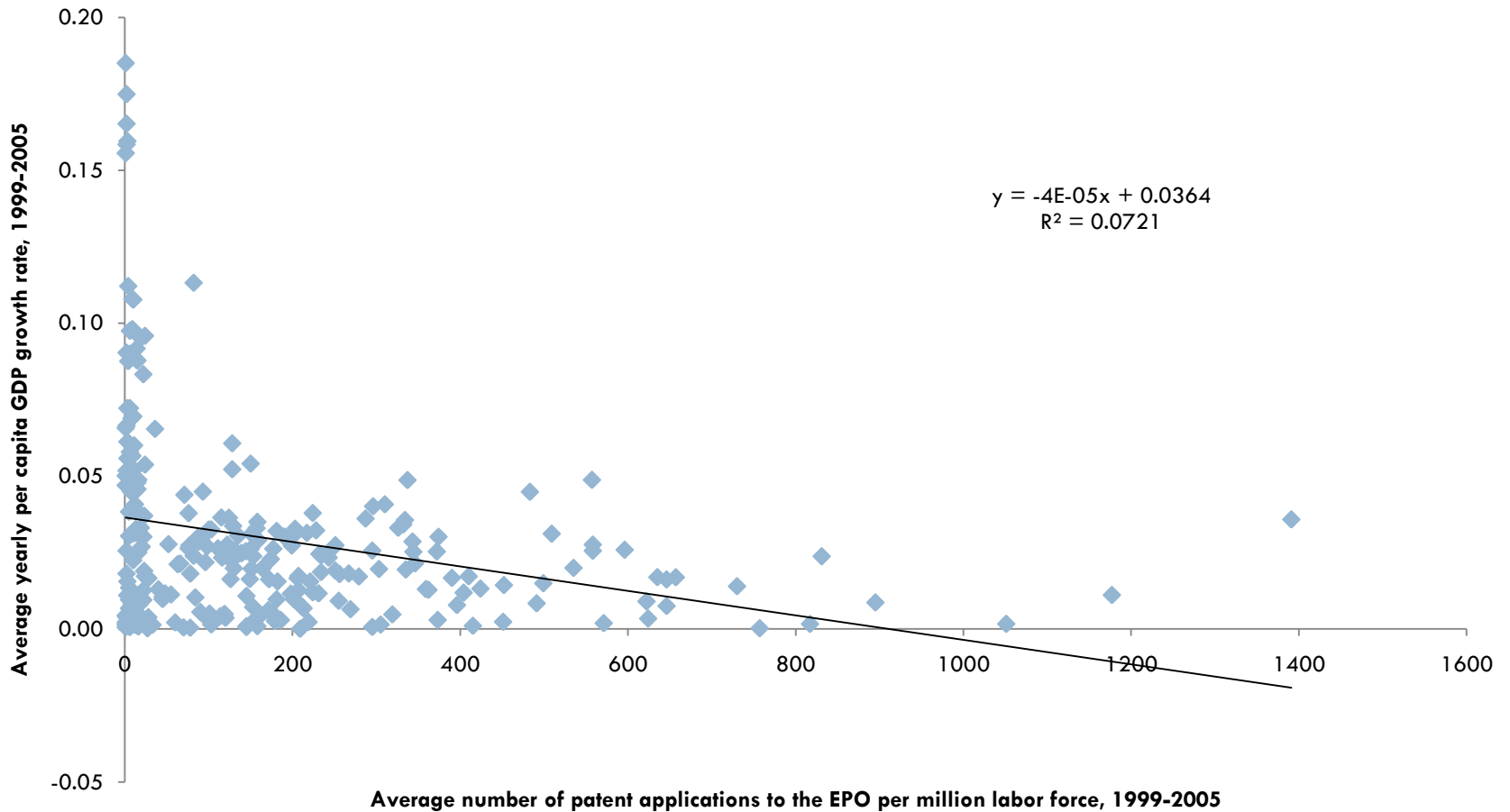


General aim of the paper



- We present a conceptual and applied framework addressing the relationship between knowledge and regional growth.
- Empirical evidence shows consistent discrepancies between knowledge inputs and regional growth. Although several studies tried to understand this puzzle, existing explanations are not sufficient.

Economic growth is weakly related to patenting activity





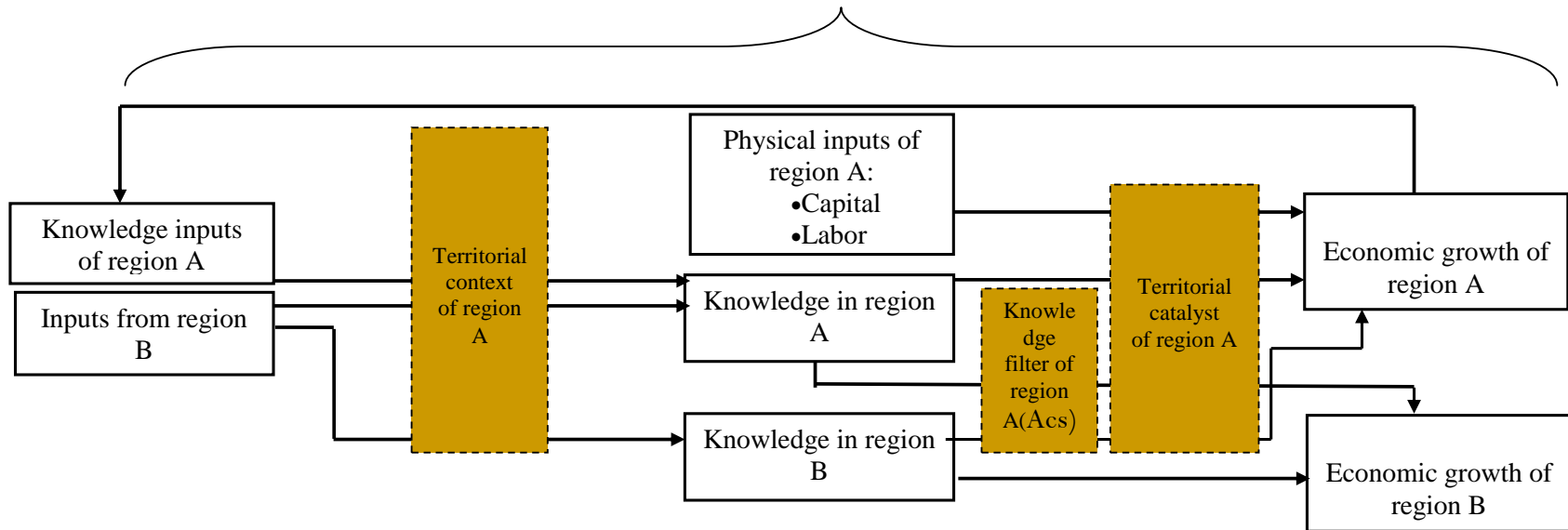
Specific aims of the paper



- Stress the limits of previous conceptual approaches (and in particular, why knowledge creation does not necessarily lead to growth);
- Present our own conceptual approach on the link between knowledge and regional productivity;
- Empirically test own conceptual approach on 261 European NUTS2 regions.

1. Existing literature

- Milieu innovateur
- Learning region and regional innovation systems
- Social filter theory



Knowledge production function
 •Knowledge spillover theory

Regional growth function
 •Knowledge filter theory of entrepreneurship



2. Our conceptual approach



- The success of a territorial system does not depend only on the quantity and quality of the material resources which agents accumulate.
- Propensity to cooperate, to exchange ideas, to interact in a socially homogeneous local environment is an important element for knowledge development and exploitation.



Territorial capital



- Intangible elements are part of a territorial capital, a concept recently put forward in the policy arena (OECD, DGRegio)
- “Each Region has a specific ‘territorial capital’ that is distinct from that of other areas and generates a higher return for specific kinds of investments than for others, since these are better suited to the area and use its assets and potential more effectively. Territorial development policies (policies with a territorial approach to development) should first and foremost help areas to develop their territorial capital” (European Commission, 2005, p. 1, cited in Camagni 2008).

Rivalry	High rivalry (private goods)	<u>Private fixed capital stock</u> <u>Pecuniary externalities (hard)</u> <u>Toll goods (excludab.)</u>	<u>Relational private services operating on:</u> - external linkages for firms transfer of R&D results <u>University spin-offs</u>	<u>Human capital:</u> - entrepreneurship - creativity - private know-how <u>Pecuniary externalities (soft)</u>
	(club goods) (impure public goods)	<u>Proprietary networks</u> <u>Collective goods:</u> - landscape - cultural heritage (private “ensembles”)	<u>Co-operation networks:</u> - strategic alliances in R&D and knowledge - p/p partnerships in services and schemes <u>Governance on land and cultural resources</u>	<u>Relational capital:</u> - co-operation capability (trust) - collective action capability (participation) - collective competencies
	(public goods)	<u>Resources:</u> - natural - cultural (punctual) <u>Social overhead capital:</u> - infrastructure	<u>Agencies for R&D transcoding</u> <u>Receptivity enhancing tools</u> <u>Connectivity</u> <u>Agglomeration and district economies</u>	<u>Collective action:</u> -Conventions -Behavioural codes -Representations -Values
Low rivalry	Tangible goods (hard)	Mixed goods (hard + soft)	Intangible goods (soft)	Materiality



A classification of territorial capital

<p><u>Private fixed capital stock</u></p> <p><u>Pecuniary externalities (hard)</u></p> <p><u>Toll goods (excludab.)</u></p>	<p><u>Relational private services operating on:</u></p> <ul style="list-style-type: none"> - external linkages for firms transfer of R&D results University spin-offs 	<p><u>Human capital:</u></p> <ul style="list-style-type: none"> - entrepreneurship - creativity - private know-how <p><u>Pecuniary externalities (soft)</u></p>
<p><u>Proprietary networks</u></p> <p><u>Collective goods:</u></p> <ul style="list-style-type: none"> - landscape - cultural heritage (private "ensembles") 	<p><u>Co-operation networks:</u></p> <ul style="list-style-type: none"> - strategic alliances in R&D and knowledge - p/p partnerships in services and schemes <u>Governance on land and cultural resources</u> 	<p><u>Relational capital:</u></p> <ul style="list-style-type: none"> - co-operation capability (trust) - collective action capability (participation) - collective competencies
<p><u>Resources:</u></p> <ul style="list-style-type: none"> - natural cultural (punctual) <p><u>Social overhead capital:</u></p> <ul style="list-style-type: none"> - infrastructure 	<p><u>Agencies for R&D transcoding</u></p> <p><u>Receptivity enhancing tools</u></p> <p><u>Connectivity</u></p> <p><u>Agglomeration and district economies</u></p>	<p><u>Collective action:</u></p> <ul style="list-style-type: none"> - Conventions - Behavioural codes - Representations - Values

Private capital

<p><u>Private fixed capital stock</u></p> <p><u>Pecuniary externalities (hard)</u></p> <p><u>Toll goods (excludab.)</u></p>	<p><u>Relational private services operating on:</u></p> <ul style="list-style-type: none"> - external linkages for firms transfer of R&D results University spin-offs 	<p><u>Human capital:</u></p> <ul style="list-style-type: none"> - entrepreneurship - creativity - private know-how <p><u>Pecuniary externalities (soft)</u></p>
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Cognitive capital

<p><u>Private fixed capital stock</u></p> <p><u>Pecuniary externalities (hard)</u></p> <p><u>Toll goods (excludab.)</u></p>	<p><u>Relational private services operating on:</u></p> <ul style="list-style-type: none"> - external linkages for firms transfer of R&D results University spin-offs 	<p><u>Human capital:</u></p> <ul style="list-style-type: none"> - entrepreneurship - creativity - private know-how <p><u>Pecuniary externalities (soft)</u></p>
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Infrastructure capital

<p><u>Private fixed capital stock</u></p> <p><u>Pecuniary externalities (hard)</u></p> <p><u>Toll goods (excludab.)</u></p>	<p><u>Relational private services operating on:</u></p> <ul style="list-style-type: none"> - external linkages for firms transfer of R&D results University spin-offs 	<p><u>Human capital:</u></p> <ul style="list-style-type: none"> - entrepreneurship - creativity - private know-how <p><u>Pecuniary externalities (soft)</u></p>
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Social capital



Some reasons why cognitive elements may matter

- Persuading others to act as desired may be less expensive with homogenous societies, where people understand each other (Mc Closkey and Klamer 1995);
- Transaction costs may be lower;
- Cheap talk may convey more information and be more likely to reach stable equilibria (Farrell 1995).



Testable assumption



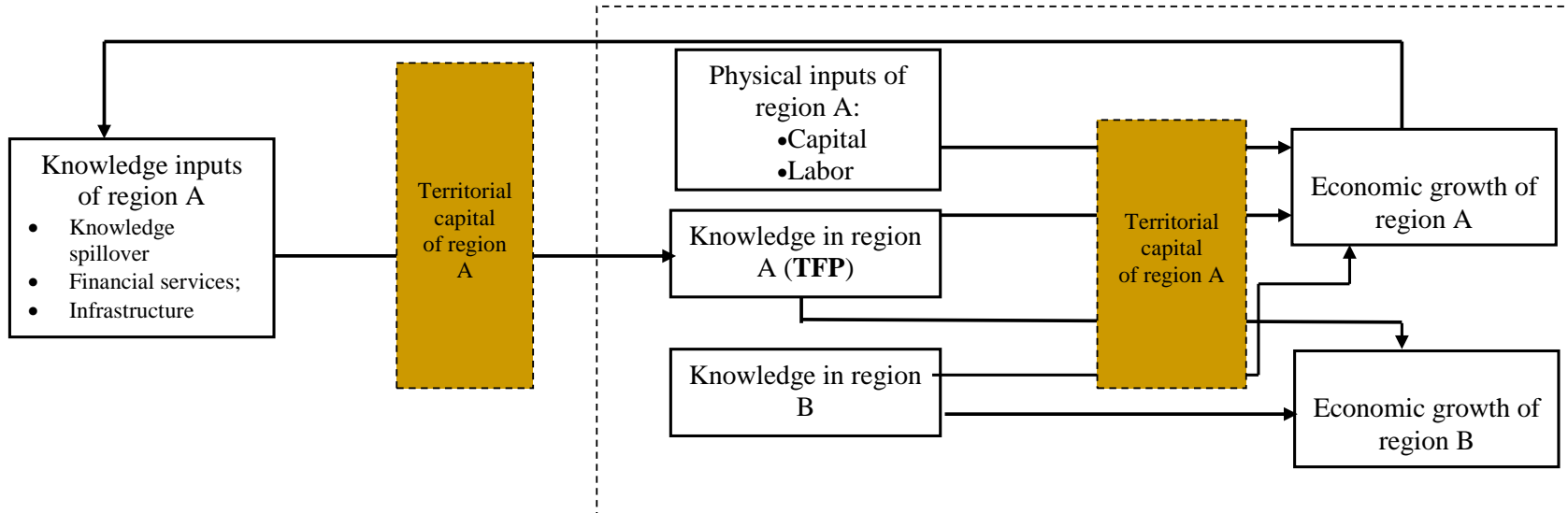
The higher the presence of cognitive elements of territorial capital in a region, the higher the region's capacity to exploit knowledge and achieve increasing returns in growth processes.

Empirical tests - 1

- The first test is carried out on a model à la Lucas (1988), in which cognitive elements in the territorial capital domain generate increasing returns. The growth equation we test is

$$\ln\left(\frac{y_{r,t+1}}{y_{r,t}}\right) = \ln\left(\frac{A_{r,t+1}}{A_{r,t}}\right) + \alpha \ln\left(\frac{k_{r,t+1}}{k_{r,t}}\right) + (1 - \alpha) \ln\left(\frac{uh_{r,t+1}}{uh_{r,t}}\right) + \eta \ln\left(\frac{tc_{r,t+1}}{tc_{r,t}}\right)$$

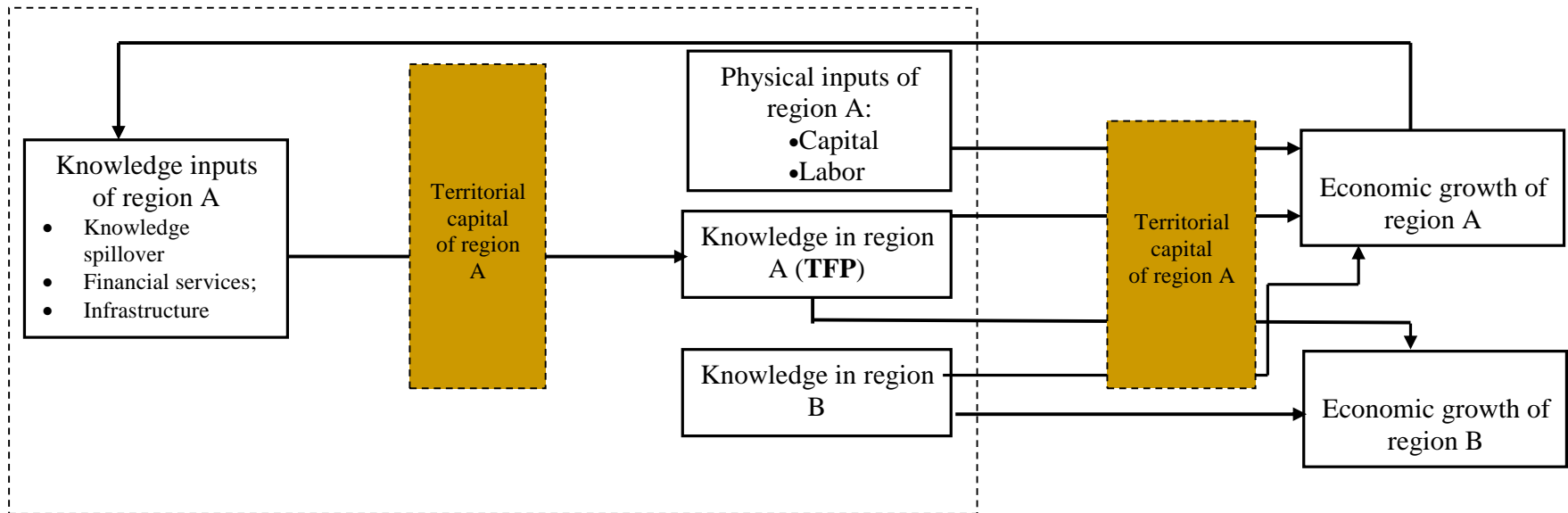
What we study - 1.



- We also show that the concept of territorial capital can explain productivity levels in a more traditional knowledge production function approach. We therefore estimate

$$TFP = INV^{\alpha} H^{\beta} INF^{\gamma} FS^{\delta} KI^{\kappa} TC^{\tau}$$

What we study - 2.





Data base and sources – 1.



Variables	Source
GDP, labour force, human capital	EUROSTAT
Transport infrastructure (kms. of roads)	ESPON project 1.2.1, Mcrit
Cognitive components in the territorial capital domain	European Values Study

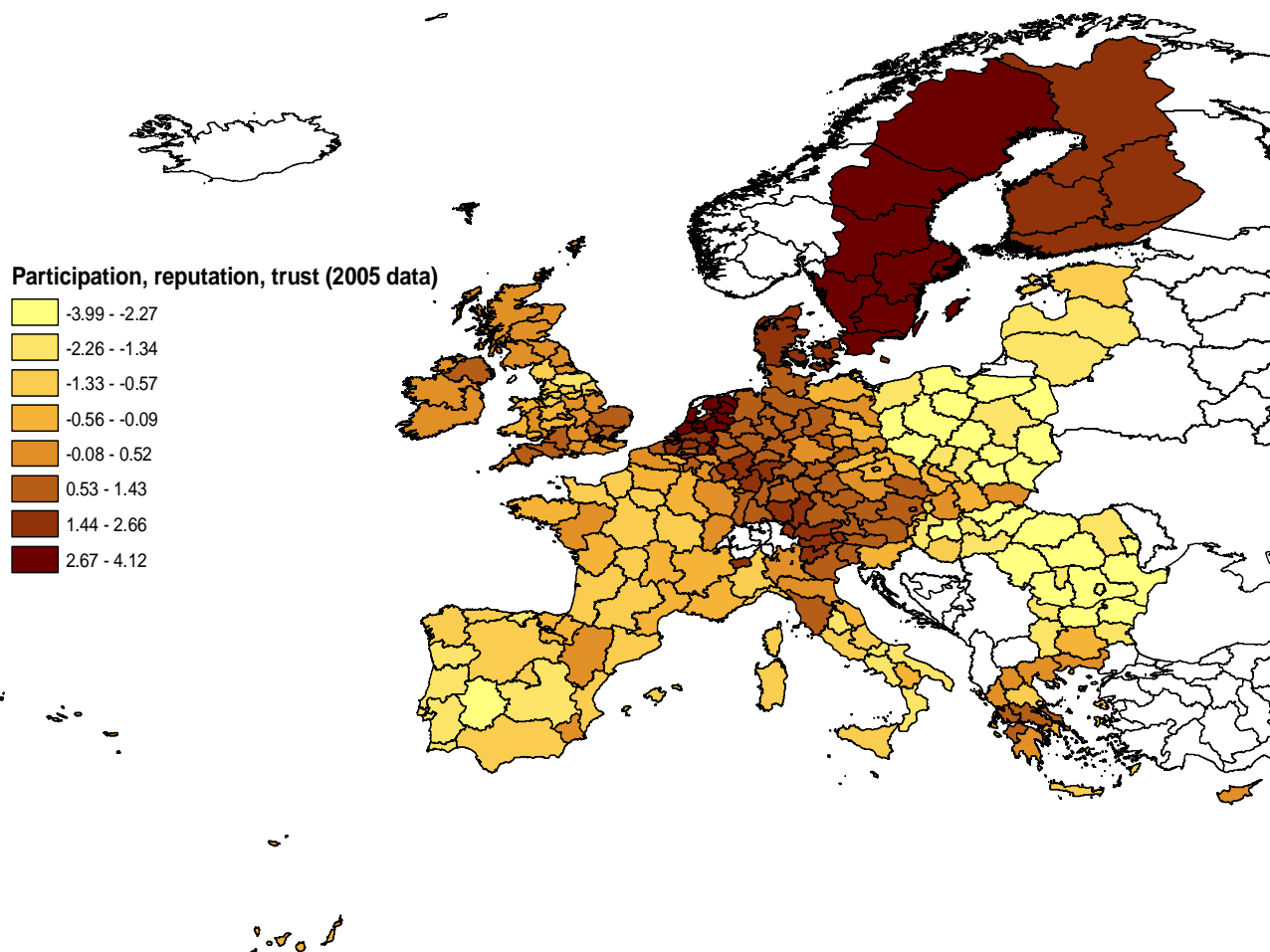


Data base and sources – 2.



Domain	Question	Scale
<u>Community organizational life</u>	How often spend time in clubs and voluntary associations?	1 every week 2 once or twice a month 3 a few times a year 4 not at all
<u>Engagement in public affairs</u>	Participation in any social activity	0-1
<u>Community volunteerism</u>	Voluntary work in any community activity	0-1
<u>Informal sociability</u>	Agree that “Most people can be trusted”	1 trust them completely 2 trust them a little 3 neither trust nor distrust them 4 do not trust them very much 5 do not trust them at all

A map of cognitive elements



Empirical results - 1.

	OLS 1	OLS 2	Fixed effects 1	Fixed effects 2
$\ln\left(\frac{A_{r,t}}{A_{r,t-1}}\right)$	-	.06 (.01)	-	.08 (.01)
$\ln\left(\frac{K_{r,t+1}}{K_{r,t}}\right)$	.06 (.006)	.05 (0.07)	.07 (.008)	.05 (.01)
$\ln\left(\frac{H_{r,t+1}}{H_{r,t}}\right)$	.09 (.02)	.11 (.02)	.08 (.02)	.10 (0.02)
$\ln\left(\frac{TC_{r,t+1}}{TC_{r,t}}\right)$	.005 (.002)	.007 (.002)	.005 (.002)	.005 (.002)
Constant term	.03 (.002)	.03 (.002)	.03 (.002)	.03 (.002)
R ²	.07	.10	.07	.10
-within	-	-	.05	.10
-between	-	-	.11	.10
Number of obs.	1506	1255	1506	1255

Empirical results - 2.

Variable	OLS estimates
Investments	.14 (.02)
H	.33 (.04)
Infrastructure	-.10 (.01)
Financial services	.04 (.02)
Knowledge investments	.02 (.01)
Territorial capital	.04 (.02)
constant	-.79 (.19)
R ²	.22
within	-
between	-
Number of obs	1160



Conclusions – 1.



- We address the relationship between innovation and economic growth. We claim that the former does not necessarily lead to the latter. The reason why this passage may not be automatic is assumed to be territorial capital.
- We identify a particular subset of variables which may be responsible for fostering socio-economic interactions and mutual understanding in a spatially-bounded context.



Conclusions – 2.



- We test our hypothesis in a Lucas (1988) framework, where cognitive elements explain the formation of increasing returns to regional growth; we find that collective learning, mutual understanding, reciprocal trust and social commitment all play a major role in determining economic performance.
- The role of territorial capital elements is also tested in a simpler knowledge production function approach. The exercise demonstrates that territorial capital is positively correlated with economic performance even in this more conventional setting.

Thank you!

- Results are consistent with a different choice of cognitive elements indicators. However, we aim at strengthening the empirical results by testing different specifications.
- Work is still in progress...

