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Measuring regional systems of innovation



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Outline of the presentation

- ❑ The background in brief: evolutionary integrated views of regional systems of innovation (RSIs)
- ❑ The 'measurement issue' in RSIs
- ❑ General examples of 'problematic measurement'
- ❑ Measuring technological capabilities (TCs)
- ❑ Conceptual and empirical framework for measuring TCs in RSI
- ❑ Challenges in RSI and TC measurement
- ❑ Future directions for research



The background in brief: evolutionary integrated views of RSI

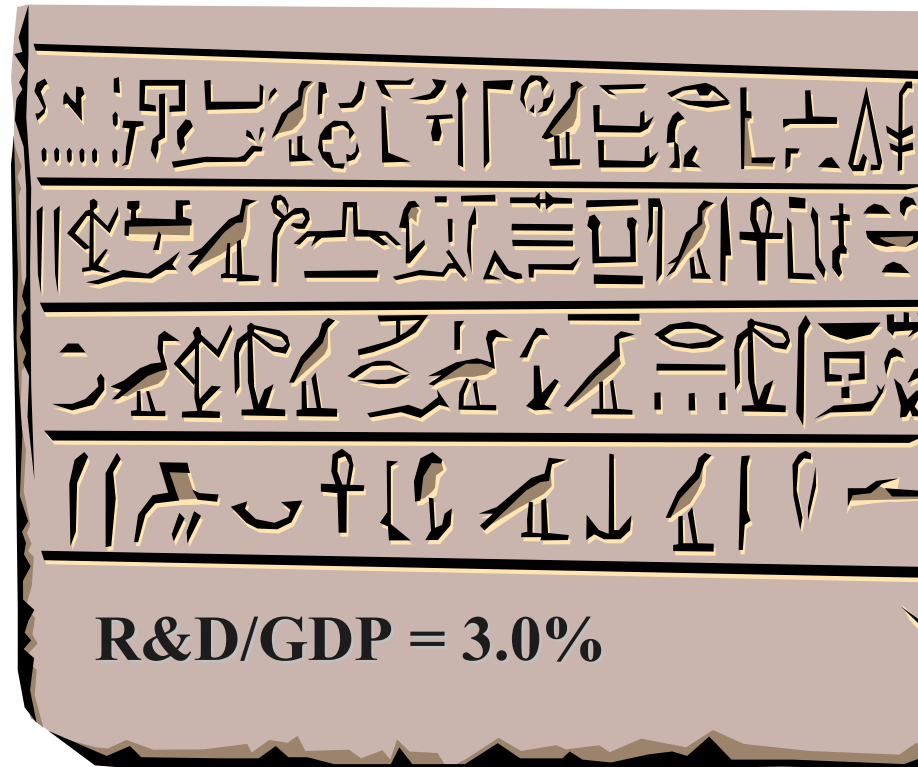
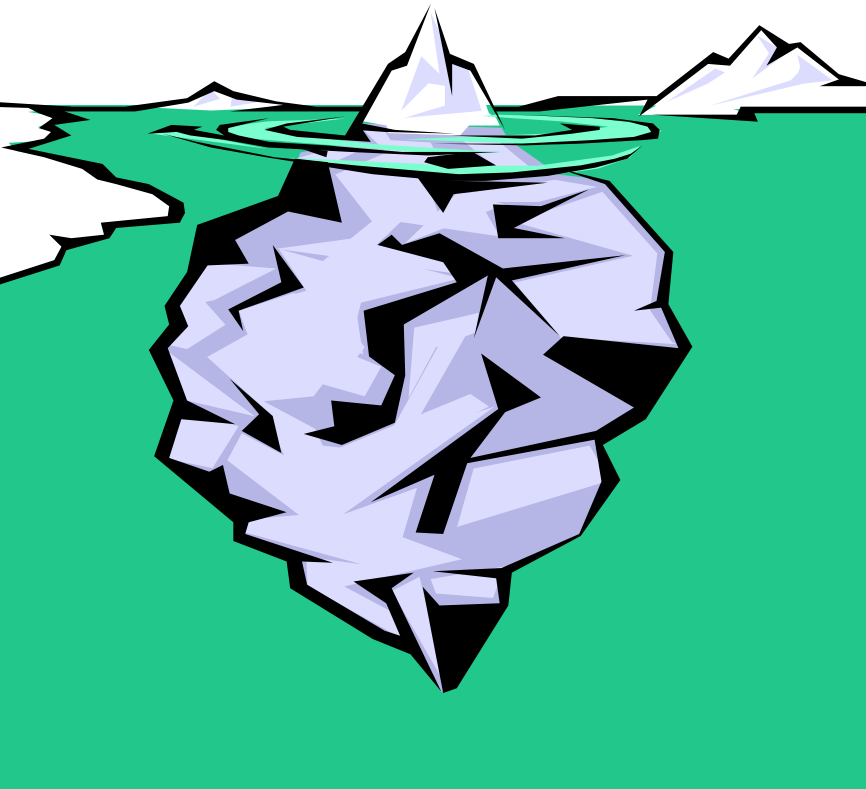
- ❑ Emphasis on evolutionary mechanisms: routines, technological trajectories, selection environments, diversity, path dependency
- ❑ Key assumption: variety in characteristics, behaviours and performances. Variety is formed by its surrounding selection environment (market/non-market factors)
- ❑ Regional environments heterogeneous (due to chance) and path dependent (because of historical contingency): they act as a selection mechanism that may/may not provide conditions favourable to meet the requirements of technical change (i.e. social capabilities for institutional change)

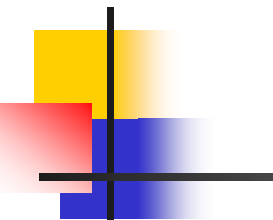


The 'measurement issue' in RSI

- ❑ Acknowledgement of the interactive nature of innovative processes, but: empirical analysis of RSIs still stuck in the consequential and oversimplified logic of the linear static model
- ❑ Availability of data and indicators on characteristics, behaviours and relationships (of/and among firms, organisations and institutions whose interactions determine the innovative performance of the RSI) far from being adequate
- ❑ More and better information and new methodologies crucial to identifying criteria for assessing the effectiveness of public policies

Regional S&T&I indicators: the state of the art





General examples of 'problematic measurement'

- ❑ In most empirical analyses regional innovativeness corresponds to the sum of selected micro behaviours – e.g. innovative activities of *resident* firms – and not to that of the system as a whole
- ❑ Critical shortage of indicators particularly to account for the degree of attractiveness, dependence and openness of the RSI, i.e. inter-regional innovation flows and networks
- ❑ Shortage even more serious for measures of intra-regional innovative flows

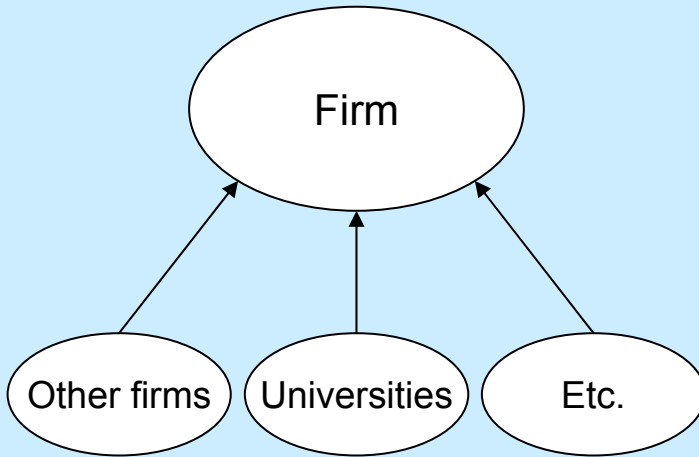
Measuring technological capabilities (TCs)



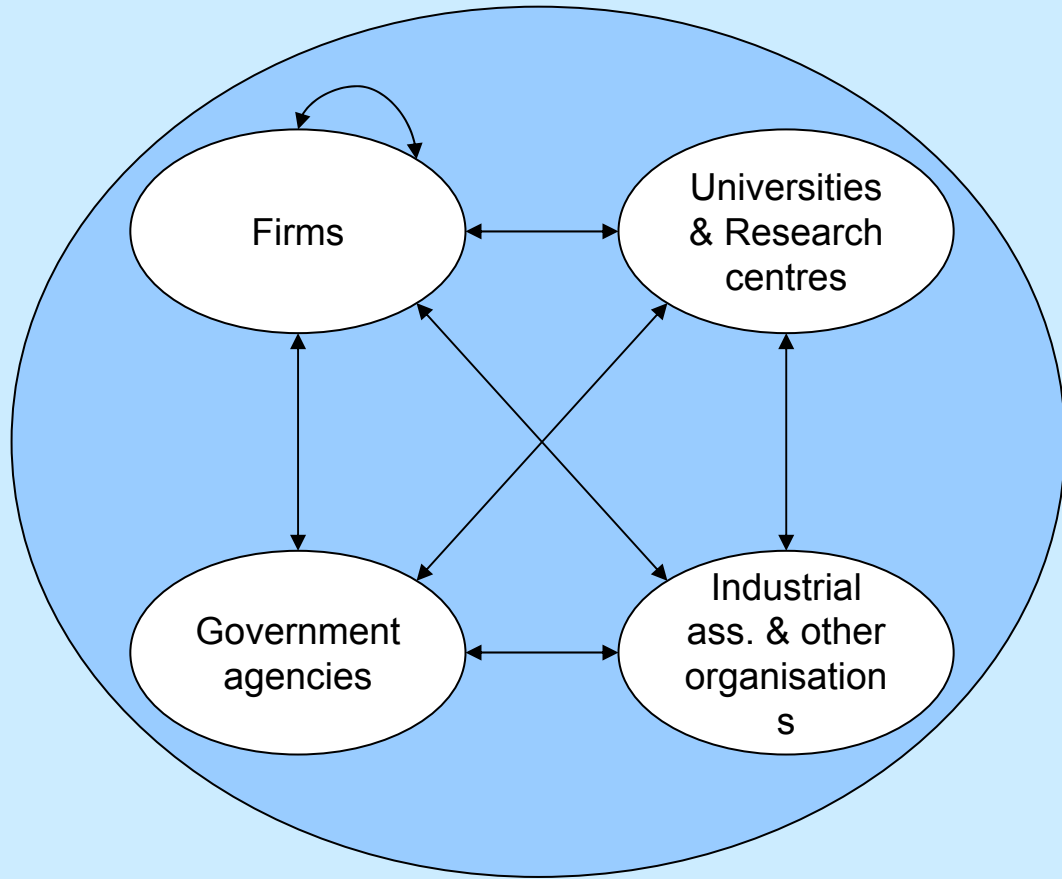
- Micro-level: technological capabilities defined as the knowledge and skills that the firm needs to acquire, use, adapt, improve and create technology
 - The study of technological capabilities at the micro-level places the firm at the centre of the analysis: one-way knowledge and resources flows
- Meso-level: technological capabilities defined as knowledge and skills embedded into individuals, organisations and institutions located in a geographically-bounded area and conducive to innovation
 - At the meso-level the region is the unit of analysis: multiple-way interactions among the different components. Elements critical to study regional technological capabilities: components, attributes, relationships

The framework for measuring TCs in RSI

Micro-level



Meso-level





Challenges in RSI and TC measurement

- New methodologies for detecting regional capabilities: need to measure both inputs into innovation behaviour and output from it
 - Inputs are the potential for effecting change (^competencies^)
 - They may boost the outcomes but to varying degrees (^capabilities^)
- On a regional level capabilities involve knowledge flows: need to improve measurement of both inter- and intra-regional relationships and networks
- Use of indicators for policy decisions (e.g. level and change of regional technological capabilities (=output of learning processes) to measure the impact of S&T&I policy)



Future directions for research

- ❑ To exploring more in depth, and in a dynamic perspective, the link between socio-economic growth and territorial systems of innovation, and the complex relationship between local governance and technology
- ❑ To digging up far more data and devise more adequate indicators than those currently available.
- ❑ To identifying the relevant unit of analysis for policy intervention. Path dependence and heterogeneity go against an *a priori* determination of the spatial level relevant for policy-makers