

Alternative modes of innovation and the challenges ahead for Innovation Studies

Maria Savona¹

¹SPRU – Science and Technology Policy Research
University of Sussex, UK

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Outline

- ▶ Topic 3 within the larger context of Innovation Studies (IS)
- ▶ What's done and what's left to do
- ▶ Some suggested avenues for research
- ▶ Some results to build up on
- ▶ A few implications in terms of data issues

50 years of Innovation Studies

- ▶ Economics, Policy, Management of Science, Technology and Innovation (STI)
- ▶ From a few scholars in Science Policy in the late 1950s to a large community of IS (Fagerberg and Verspagen, 2009)
- ▶ Incorporating technical change in micro and macro economic theory: Evolutionary economics (Nelson and Winter, 1982; Dosi, Freeman, Nelson, Silverberg, and Soete, 1988; Freeman and Louçã, 2001)

50 years of Innovation Studies: Blossomy maturity or mid-life crisis?

Achievements of IS (Martin, 2012)

- ▶ From two factors of production to three
- ▶ From a single to a multi-factor explanations of innovation
- ▶ From an optimising firm to a resource-based view of the firm
- ▶ From individual actors to systems of innovation (Universities, Business, Government)
- ▶ From market failure to system failure

Blossomy maturity or mid-life crisis?

Grand challenges ahead (Martin, 2012)

- ▶ From 'visible' to 'hidden' innovation (reprising the original Schumpeter taxonomy, beyond R&D and patents)
- ▶ From national and regional to global systems of innovation
- ▶ From innovation for productivity and growth to innovation for sustainability and development
- ▶ From entrepreneurial innovation to 'inclusive' innovation (Lundvall, 2012)
- ▶ From 'winner take all' to 'fairness for all' - inequality effect of innovation or the economics of 'superstar' (Rosen, 1981)

Mid-life crisis: the unresolved issues

- ▶ Non-R&D modes: How important they are?
- ▶ Non-R&D modes: How to measure their returns in terms of innovation output?
- ▶ Thirty years after Barras ((Barras, 1986)) and his Reverse product cycle model: Are ICTs a general purpose technology for services?
- ▶ Twenty years after the seminal Griliches ((Griliches, 1992)): are we able to provide a conceptual and methodological framework to assess productivity in services?
- ▶ The challenge of public services

Getting out of mid-life crisis: a list of To Dos

Non-R&D modes

- ▶ Going beyond traditional R&D and into the black box of 'knowledge intensity' (or Alistar KBC): is it only the 'D' by Peter Voigt?
- ▶ What are most knowledge-generating non-R&D drivers ?
- ▶ What are the most employment-friendly non-R&D drivers?

KIBS

- ▶ Boundaries between BS and manufacturing
- ▶ Do BS really fit the 'open innovation' mode?
- ▶ Intersectoral linkages and BS specialisation

Getting out of mid-life crisis: a list of To Dos

Barriers to innovation

- ▶ Looking at the characteristics of non-innovative firms vis à vis top R&D investors
- ▶ Alleviating systemic obstacles to innovation – beyond financial ones

My own contribution to IS

Sectors, regions and countries

- ▶ Economics of Innovation in services (CJE, SCED, JEE, SIJ)
- ▶ Structural change and growth of services (models and empirics) (Metroec; JEE; SCED)
- ▶ Estimation of reaction functions for countries R&D spending to explain country convergence
- ▶ **Geography of BS and regional development (JEG, JES)**

Firms

- ▶ **Micro-econom(etr)ics of innovation (obstacles to innovation and firm's performance) (RP)**
- ▶ Lately, technical change and innovation for development (India, prospectively on LACs)

Why Business Services?

- ▶ The most dramatic evidence of structural change after the first industrial revolution (Peneder, Kaniovsky, and Dachs, 2003; Schettkat and Yocarini, 2006)
- ▶ Interesting 'schizophrenic' attitude by scholars and policy makers:
 - ▶ from the threat of deindustrialisation linked to the productivity slowdown (Kaldor, 1966; Baumol, 1967; Rowthorn and Ramaswamy, 1999)
 - ▶ to the revamping optimism linked to the 'knowledge economy' (Beyers, 2002; EC, 2011) and the role of KIBS (Muller and Doloreux, 2009)
- ▶ In the meantime, EC has just launched a 2 mlns EU CFT to establish a European Service Innovation Centre (ESIC).¹

¹The main task of the ESIC is to improve the awareness among policymakers at the European, national and regional levels of the contribution of service innovation and service firms to economic development. This applies in particular to the transforming powers of service innovation in shaping emerging sectors, industries and markets.

Determinants of regional specialisation in BS in the EU-27 (Meliciani and Savona, 2011)

Intermediate demand and specialisation

BS have grown dramatically as a share of intermediate demand: in 2005 the share of BS services in total intermediate demand is as high as that of all manufacturing sectors (about 30%)

Because of vertical linkages, BS specialisation of countries and regions is very much linked to specialisation in high-BS users sectors, confirming (Hirschmann, 1958)

Agglomeration

BS have increasingly spatially concentrated across EU regions and - with the exception of capital regions - they have 'followed' their users

Knowledge

Both ICTs and R&D *within* the region favour BS specialisation, *though not* human capital

Unlike ICT spillovers, public R&D remains confined to the regional boundaries: complementarities between private and public R&D *within* the region though not *across* regions.

Implications for regional policy

- ▶ Findings support rejection of the 'footloose hypothesis' (Wernerheim and Sharpe, 2003)
- ▶ This implies that BS are **less responsive** to regional policy aiming at favouring their location in peripheral regions
- ▶ Effectiveness of subsidisation interventions aiming at facilitating location in regions not specialised in BS-user sectors is deemed to fail
- ▶ Rather, in line with (Asheim, Boschma, and Cooke, 2011), public policy aiming at 'constructing regional advantage' should aim at 'guiding' regions to diversify into 'related' sectors (Frenken, Van Oort, and Verburg, 2007) and new growth paths

Implications for structural change and innovation policy

- ▶ In this context, advocacies for policy for 'smart specialisation' make less sense if they disregard existing specialisation and do not aim to build on it
- ▶ A comparative advantage relying on KIBS ('smart specialisation'?) would not be achievable without a:
 - ▶ Appropriate mix of innovation and industrial policy to relaunch 'old manufacturing' and rural areas
 - ▶ leading to an increasing demand for knowledge-based services
 - ▶ and an 'up-grading' of existing sectoral specialisation

Why obstacles to innovation in the current crisis?

- ▶ Removing obstacles to innovation is a **necessary condition** to innovate
- ▶ (Traditional) incentives to innovation are not a **sufficient condition** to innovate
- ▶ Guidelines for policy makers on detailed areas of intervention rather than indiscriminate incentives
- ▶ Backlash of financial resources' shrink on other barriers
- ▶ Over-emphasis on financial difficulties undermines other equally important obstacles (knowledge, market, institutional)
- ▶ At the same time, the crisis has been sparked by a substantial increase of innovation in the financial sector: opening or shutting down the tap?
- ▶ How to 'redirect' efforts toward 'real innovation'?

Deterring and revealed barriers to innovation (D'Este, Iammarino, Savona, and von Tunzelmann, 2012)

Deterring and revealed effects

Deterring and revealed effects require distinct policy interventions

Cost and market barriers seem to be most deterrent when starting engaging in innovation

While knowledge and regulation are mostly perceived 'in the making' of innovation

Finance

Overall, financial constraints are over-emphasised by the literature Market structure (i.e. dominated by established incumbents) and lack of demand are major obstacles (in the Schmooklerian vein)

A few Practical implications: Data collection and use

Data use and merging

- ▶ Remove filter from all CIS!
- ▶ Focusing on the types of outputs rather than inputs (as in Giulios)
- ▶ **Longitudinal** innovation and economic data
- ▶ Merging innovation and cooperation data to highlight innovation interlinkages
- ▶ Regional innovation and input–output tables

Data crunching

- ▶ Structural Equation Modeling (though require a strong theoretical base)
- ▶ Spatial Econometrics

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