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development of Science, Technology and Innovation**

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The use of indicators and evidence in governance and policy development of Science, Technology and Innovation¹

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Abstract

In this paper we reflect upon how policy-makers look for, interpret and use evidence for reflection and policy development. We propose an exploratory framework that sets out two of the elements necessary to a conceptualization of what may explain the way in which evidence and indicators are used in STI policy development: the type of evaluative approach and the styles of governance.

Keywords: innovation policy, evidence based policy, indicators

JEL codes: O32, O38

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Introduction

The relatively poor performance of Europe in turning research into innovative new businesses, generating growth and employment, (European Commission, 2001; European Commission, 2004; Aho, 2006) is probably fuelling a need for better informed policy makers (Veugelers, 2006) and, more generally, a new “utilitarian” view of European STI – *Science, Technology and Innovation* policy. Evidence-based policy i.e. what works, rather than rationale informed by systemic models of innovation and from economic theories of knowledge and technical change, seems to be a watchword for STI policies in many European countries. The increasing large sums of public funding to R&D at European and National levels combined with the easiness of access to computer-based data collection are, according to some authors, the main determinants of this renewed interest in using evidence and indicators as inputs for policy development (Freeman and Soete, 2009; Grupp and Mogege, 2004; Godin, 2008).

According to Freeman and Soete (2009 p. 11) “having broadened STI indicators from R&D to the “blue sky of innovation”, we seem to have come even closer to the measurement of economic dynamics”. For more than a decade now, the European Commission publishes the EIS – *European Innovation Scoreboard*, (recently renamed *Innovation Union Scoreboard*), with a view to gather evidence that can be used for systematic comparison of innovation performance across countries/regions, promoting international policy benchmarking (Grupp and Mogege, 2004; Grupp and Shubert, 2010). Both PRO INNO Europe and ERAWatch systematically collect and diffuse data and evidence on European, National and Regional research and innovation, as well as on which policies and programmes are implemented across Europe. Moreover, contributing to this new interest on evidence and indicators, we also have a growing demand from private business, an industry of consultants and policy advisors (Mytelka and Smith, 2002; Godin, 2008) and numerous reports on technology assessment that indicate the need to enhance the evidence upon which to base forecasts on the impacts of future technology developments (Grunwald, 2007; STOA, 2004).

However, while there is an increasing interest in the use of evidence, there is also a growing academic discussion and controversy on the purpose and methodologies used to gather data and build STI indicators (Godin, 2008; OECD, 2008; Grupp and Mogege,

2004; Barré, 2004). Authors such as Grupp and Schubert (2010) sustain the idea that some aggregate/composite indicators were not subject to extensive research, and may present confidence, comparability and overlapping problems. Additionally, indicators used to benchmark countries and regions are often subject to decontextualized interpretation, simplification by the media and political appropriation (Feller-Länzlinger et al. 2010). Because of their inherent pragmatism, indicator sets (scoreboards) and composite indicators or indexes are often preferred by policy-makers as they may function as strategic instruments to influence policy change.

Although we agree that STI indicators are in need of more extensive scientific research (Feller-Länzlinger et al, 2010), we do not wish to discuss here their technical and methodological limitations in design, embodied concepts, completeness, etc. In our view it is equally important to understand the articulation between “indicators” and their use as input for policy decision making.

An interesting approach, proposed by Perri Six (2002), suggests that the situations in which policy makers find themselves, will shape which information from the complex set available is used and, most importantly, which information is rejected or at least downplayed. Perri Six (p.7) argues that policy-making “always makes use of some evidence, but that there is a plurality – a limited plurality, indeed – of things that count as evidence, and what counts depends on where policy makers are situated”.

In this paper we take up the challenge to reflect upon how policy-makers look for, interpret and use evidence for reflection and policy development. We propose an exploratory framework that sets out two of the elements necessary to a conceptualization of what may explain the way in which evidence and indicators are used in STI policy development. By making interviews to decision makers involved in STI policies, in Portugal and Germany we hope to gather information on how are indicators (and other evidences) being used for policy development.

From pure evaluative to mixed or combined approaches

Our first conjecture is that the use of evidence and indicators by STI policy-makers is a combination of a pure evaluative approach – within the technical constraints and limitations of indicators’ construction – with ideas, conciliation of interests and considerations of popular support and acceptability of key constituencies. By a pure evaluative approach we mean an approach that values technical evidence e.g. ex-ante cost-effectiveness, overlooking other kinds of evidences.

The first direction of research is therefore the extent to which the use of evidence varies between a pure evaluative approach based on technically sound metrics and a combined approach, and what might be associated to this variation.

Policy makers’ use of composite indicators for impressionistic propaganda (and oversimplification) is an example of a combined approach where evidence is used (or rejected/downplayed) to suit political intent. The relevance of composite indicators to policy is perhaps best captured by the idea of indicators that become “policy-resonant” (Hezri and Dovers, 2006) *i.e.* an indicator that “strikes a chord” with its intended target audience, hence easier to communicate and often appropriated by policy-makers and by the media. Policy makers’ claims that some indicators are difficult to interpret and/or peripheral to the issues that generate political concern (Nardo et al, 2005) may be, on the other hand, taken as examples of how evidence is rejected because it may not suit policy ideas.

On the other extreme, the use of evidence by independent policy evaluators may be closer to a pure evaluative approach *i.e.* with the objective of building technically coherent measurement sets upon which to surmount technically sound advice.

The use of evidence and governance

Second, another possible direction for research is whether the use of evidence and indicators is associated to styles of governance. In STI policy, decision processes appear to be broadening away, from “simple” hierarchical mechanisms, towards collective multi-actor multi-level participative consensus building and other less formal arrangements (Edler *et al*, 2003; OECD, 2005; Borrás, 2009). While this clearly brings new issues of accountability and efficiency, it also demands for a “different” use of evidence in policy development.

The more rigid hierarchical forms of governance, though perhaps recognising limitations in the use of statistical evidence and quantified information, tend to assume that indicators inform decisions in a somewhat linear and mechanistic manner. The assumption is that more precise and higher quality indicators will always positively influence policy decision-makers.

In the centralised forms of governance indicators are perhaps used to diagnose and justify or to build upon a given rationale. By contrast in the new multi-actor, network forms of governance, indicators must serve the ‘steering’ of a complex system of interactions requiring multiple information flows directed to different user segments, each with its own political agenda. It also requires different communication strategies of the indicators and indicator systems used. Network forms of governance may therefore lead to a better set of consensual indicators compared with that obtain through centralised governance forms.

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